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Railway & Commercial Gazette
Vol. CCXXXIX No. 6110 LONDON, SEPTEMBER 26, 1952 PRICE 8d

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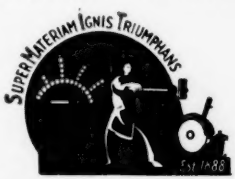

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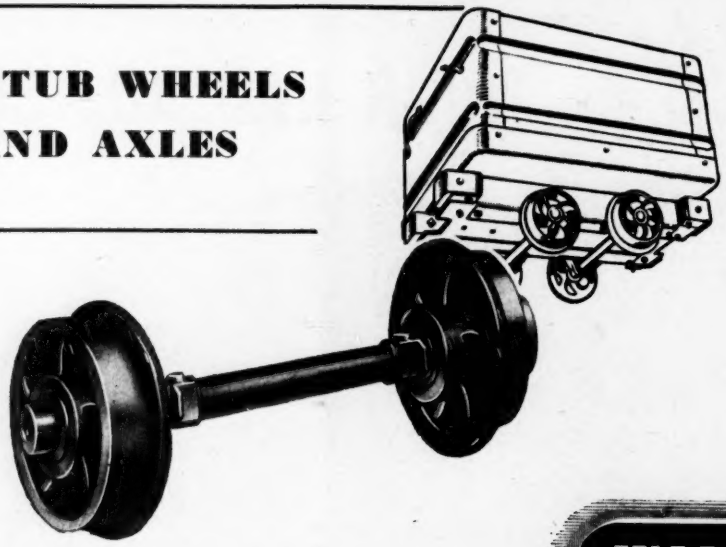

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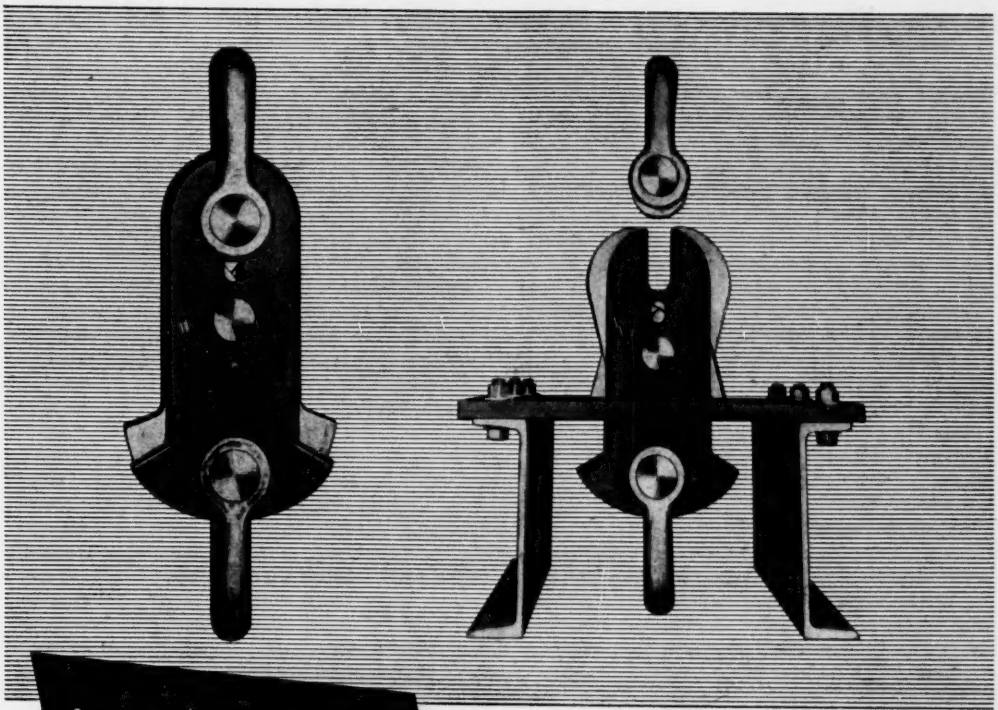

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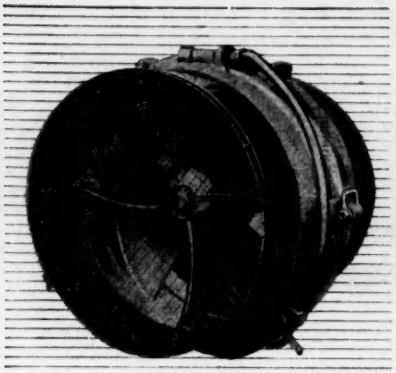

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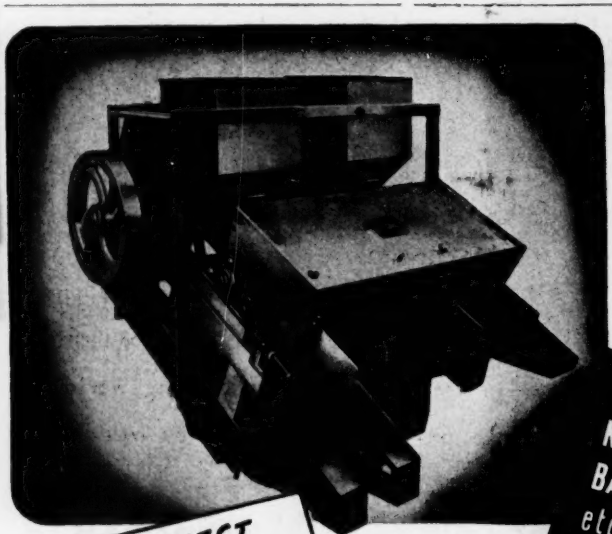

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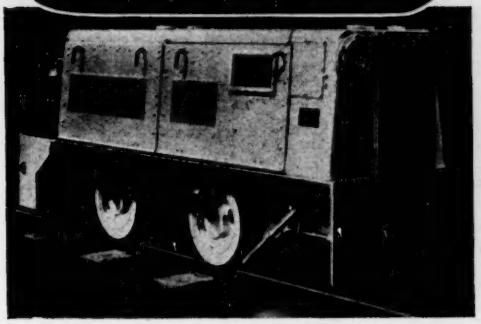

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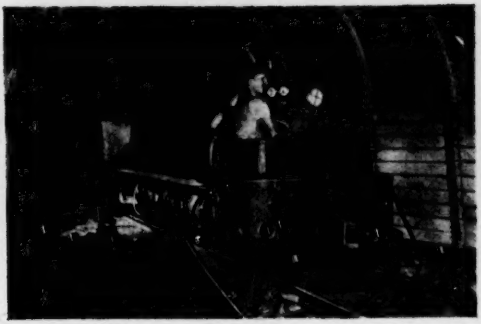

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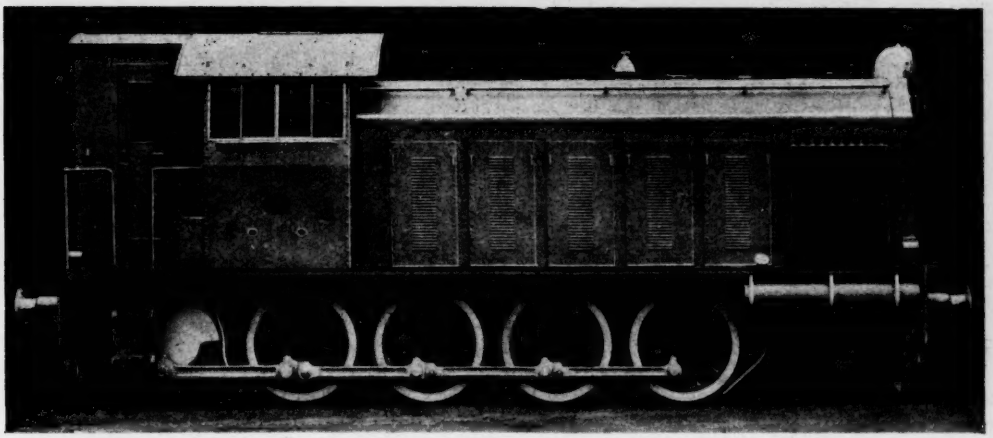

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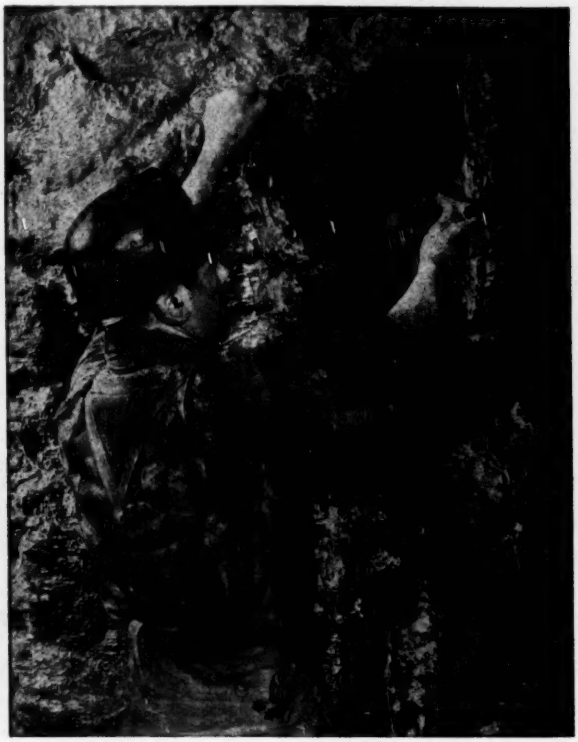

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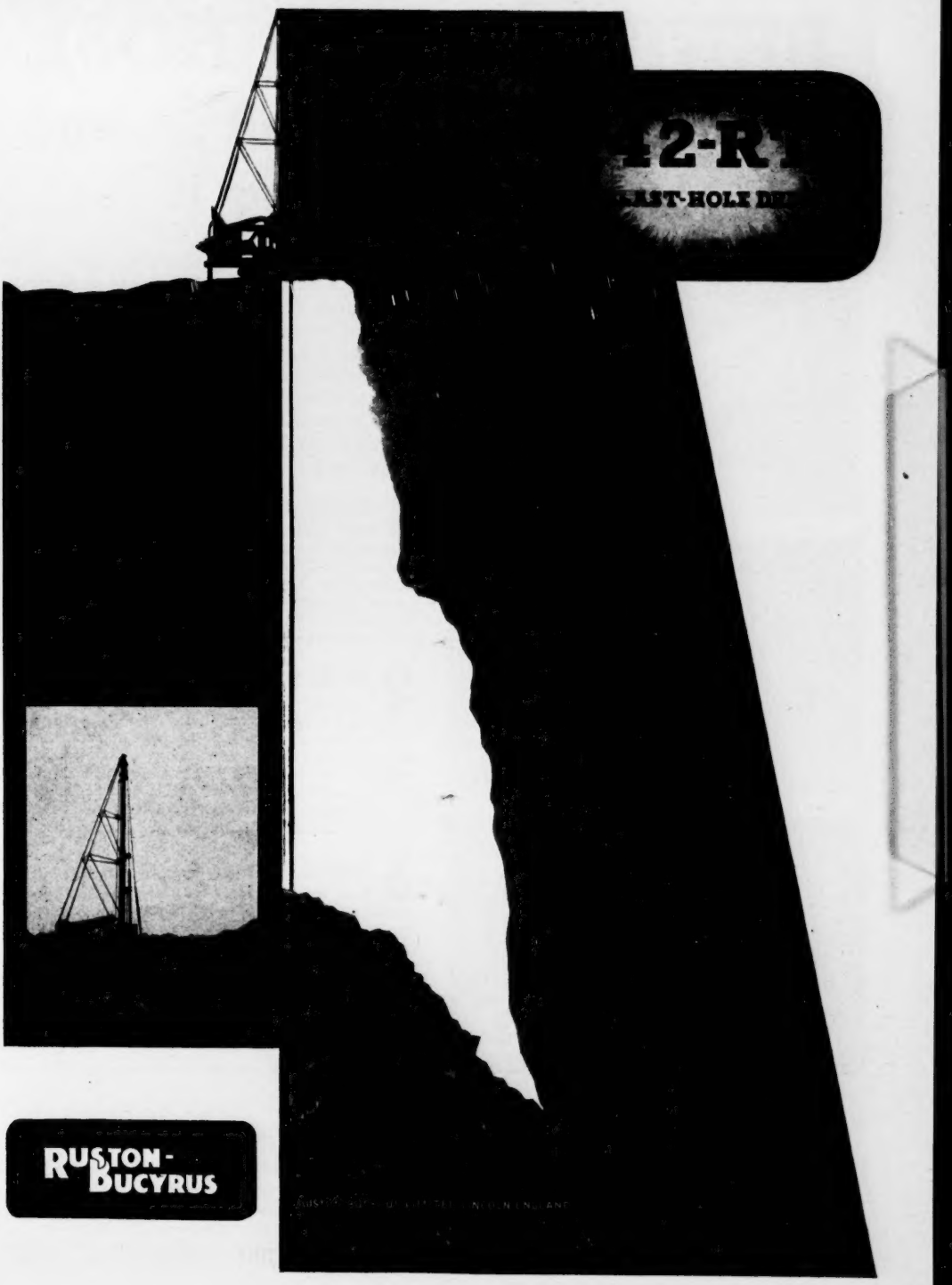
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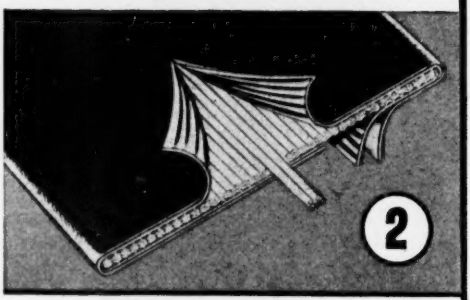

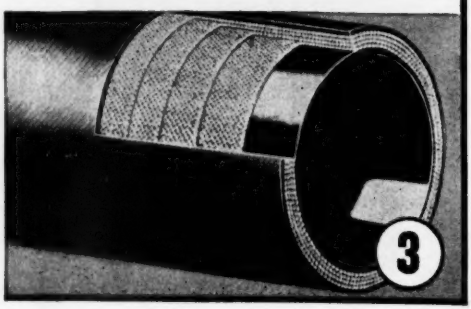

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The "Stacker" belt illustrated here is designed for installations which handle highly abrasive materials. Its tough resilient cover "gives" under impact and resists cutting. High grade bonding between the plies prevents separation under severe flexing. It is proofed against the ruining effects of mildew.

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Established 1835

Vol. CCXXXIX No. 6110 LONDON, SEPTEMBER 26, 1952 Price 8d

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NOTES AND COMMENTS

The Symposium on Mineral Dressing

The Symposium on Mineral Dressing, so successfully organized by the Institution of Mining and Metallurgy, ended yesterday after three full days of discussion on the thirty-nine papers presented. While a rough analysis of the subject matter discussed indicates, superficially at any rate, that flotation was the dominating theme, followed by grinding, sizing, gravity concentration, cyanidation and lastly, magnetism and electricity, it would be meaningless to draw any firm conclusions from this descending scale of preference for the topics chosen, as several of the papers ranged over a broad field and referred to many subjects other than their main theme.

What is important, however, is the fact that new and valuable advances in the field of mineral dressing have been achieved, and the forum which this Symposium provided will enable specialists from all parts of the world to consolidate their own findings and to synthesize the experiences of others in this field to the advantage of their respective mining industries, no less than to the prosperity of world mining.

More specifically, the Symposium will serve to focus attention on the importance of mineral dressing as an independent discipline and will confirm the beliefs of those in this country who worked so long towards the establishment of a degree course in mineral dressing at the Royal School of Mines, which was approved by the Senate of London University shortly before the Symposium began. Moreover, the reconstruction of the Bessemer Laboratory of the Royal School of Mines, providing as it does the practical side of the newly inaugurated three-year post-intermediate degree course, will be invaluable in assisting mineral dressing engineers in furthering progress in this essential branch of mining science.

Liberation of Steel

The early demise of the system of steel allocations is confidently predicted. The critics affirm that it has aggravated the evils it was designed to cure. Equitable distribution was its aim: maldistribution has been the result The shortage of steel throughout the whole of the current year has been notorious. Essential industries have been gravely handicapped; workers in some instances have been laid idle through the lack of steel, yet all the time consumer held stocks have been growing and in six months the stock of steel in producers' hands has increased by 250,000 tons. In the present state of supply and demand no steel should be going into the stockpiles; every available ton should be put to immediate use.

One of the complaints is that allocations have been based on requirements in 1950, and take no account of the changing pattern of demand since that date. In substance it is the familiar accusation of the malign consequences of bureaucratic control.

A few weeks ago the British Iron & Steel Federation made a guarded reference to the "unbalanced distribution of supplies" and the sequel has been a swelling chorus of protests against the inefficient use of available resources.

Abolition of all controls may not necessarily be the best answer. So long as steel is in short supply some effort must be made to ensure adequate deliveries where they are most needed. But production is now rising rapidly. Deliveries are now running at a very much higher rate and it is believed that by the spring of 1953 the shortage will have been overcome.

We may not have to wait so long as that for the restoration of freedom to the steel industry, subject possibly to directives in favour of the Defence programme and the export drive.

Magnetic Separators Wanted in Ceylon

Before the end of the current year Ceylon is likely to begin shipments of refined monazite sand containing the radioactive mineral thorium, writes our Ceylon correspondent.

Six tons of this refined sand—the thorium content of which, according to the Industries Department, varies between 2 and 22 per cent—is now awaiting shipment and the Ceylon Government has sanctioned its export either to the United States or to the United Kingdom.

The monazite sand deposits are found on Ceylon's sea beaches in large quantities and are at present concentrated

by magnetic separation in a pilot plant at Katakurunda, not far from Colombo, with the aid of a magnetic separator on loan from India. In this connection our correspondent reports that tenders have been called for the third time for the supply and installation of machinery destined for the Government's projected ilmenite factory at Pulmodai in North Ceylon. According to all the information available the projected factory will cost in the region of Rs. 7,000,000 and will house approximately 15 separator units to exploit the beach sands for their ilmenite, zircon and rutile.

The successful tenderer is not expected to equip the factory with all the required separators immediately, but will, in the first instance, be called upon to supply two separators on a more or less experimental basis. However, should the results produced from these two units be satisfactory, the further question of entrusting the entire work to that contractor would be considered.

The Ceylon Government is anxious to expedite the establishment of this factory in view of the attractive market now available for its products, but the Government does not intend to undertake the processing of these minerals for the time being because of the highly technical nature of the work involved. The immediate plan is to ship the separated products to manufacturing groups in the United Kingdom, in the United States and in different parts of Europe.

Resources and Products of the Commonwealth

Those persons who may be none too clear as to the vital and commanding position held by the Commonwealth as a major world supplier of certain basic raw materials will welcome the publication by H.M.S.O. of an attractive see-it-at-a-glance map of the world in six colours, setting out in graphic form the natural resources and manufactured products of the Commonwealth of Nations.

Prepared for the Commonwealth Relations Office by the Central Office of Information, the map is priced at 1s. 6d. and shows that nearly every type of raw material used by industry can be obtained from some part of the Commonwealth. For example, the Commonwealth produces nearly all of the world's nickel, over seven-eighths of the world's asbestos, over two-thirds of the world's manganese and over one-third of the world's tin.

However, it clearly shows too, that the Commonwealth countries are not self sufficient and that there is a continual need for the exchange of products both within the Commonwealth and with other countries. While this reflected impression may be a glimpse of the obvious, it is a source of never ceasing wonderment how muddle-headed, politicians and others in key positions can be about the tremendous wealth and power contained in the Commonwealth. The map has therefore a wide market and if it leads to a better understanding about the sources of raw materials without which the industrial machine would stall it will have achieved something which text books, relying on the printed word, have never successfully accomplished.

Improving O.F.S. Power Supplies

The present power shortage in the Orange Free State goldfields which has necessitated a revision of the mines' operating schedules will soon be substantially improved, for the first generator of the £11,000,000 Vierfontein power station is expected to come into operation within the next few months.

Further expansion in the power supply of the O.F.S. will be effected by the Vaal power station on the other side of the Vaal River which is being enlarged from its former capacity of 172,000 kW. to 318,000 kW. While in the not too distant future, the O.F.S. will have the benefit from the building of the giant power station on which construction has now started near Coalbrook in the north of the Orange Free State. This plant, which will ultimately be the second largest in South Africa, will cost £16,000,000 and is designed to supply 420,000 kW.

The Coal Industry

(From Our Coal Correspondent)

The efficiency of coal utilization in industry has been improving steadily since the beginning of the century and the fact that industrial output has been mounting in Great Britain at a time when coal has been in short supply suggests that progress in this direction has been accelerating. The report of the Ridley Committee,* issued on Sept. 10, shows, however, that still greater efforts will have to be made to raise the general level of thermal efficiency if the gap between demand and supply is to be closed within the next ten years.

The distribution of fuel and power in the United Kingdom in 1951, for all purposes other than for road transport, is shown in the Table below and the estimated requirements in ten years' time are shown in brackets. The committee estimates that the total demand at home and for exports will amount to between 273,000,000 and 283,000,000 tons, expressed in the equivalent of coal, of which coal itself would have to provide between 257,000,000 and 267,000,000 tons, oil 14,000,000 tons and hydro-electric power 2,000,000 tons. The committee see no prospects of getting this amount of coal from the mines, even with a vast expenditure of capital, they therefore conclude that the problem can be solved only by greater saving of coal and energy.

Fuel and Power consumption in the United Kingdom in 1951, in millions of tons of coal and coal-equivalents. The estimated values for 1959-1963 are shown in brackets.

Sector	*Coal Used Directly*	*Coke, etc.*	*Gas*	*Electricity*	*Oil, excluding Road Transport*	*Total*
Domestic ...	35.1(34.6)	4.2 (7.4)	9.2(11.4)	11.2(12.9)	0.7(1.1)	60.4 (67.4)
Iron & Steel	8.0 (9.1)	17.1(26.0)	2.9 (3.9)	4.3 (5.5)	1.5(2.7)	33.8 (47.2)
Other Industries.	38.3(38.0)	5.3 (6.8)	3.1 (4.0)	12.7(20.7)	4.1(7.1)	63.5 (76.6)
Commercial	2.4 (0.8)	4.7 (5.2)	1.8 (2.6)	3.0 (5.0)	0.2(1.0)	12.1 (14.6)
Public Authorities	4.8 (4.8)	2.9 (2.9)	1.3 (1.4)	2.6 (3.3)	0.2(0.2)	11.8 (12.6)
Railways ...	14.1(13.7)	0.4 (0.4)	—	1.2 (1.3)	0.1(0.3)	15.8 (15.7)
Colliery Power.....	10.5 (7.5)	—	0.1 (0.1)	1.5 (1.5)	—	12.1 (9.1)
N. Ireland ..	2.8 (3.1)	—	—	—	—	2.8 (3.1)
Loss in transit, etc.	1.9 (2.1)	—	—	—	—	1.9 (2.1)
Total ...	117.9(113.7)	34.6(48.7)	18.4(23.4)	36.5(50.2)	6.8(12.4)	214.2(248.4)

The report contains no less than 40 recommendations to this end, covering the industrial, transport and domestic fields. The committee have not attempted to estimate how much coal could be saved if all their recommendations were adopted, but their suggestion that the manufacturing industry alone should be able to reduce their consumption by 15 to 20 per cent gives an indication of the possibilities. They advocate the continuation of competition between the nationalized gas and electricity undertakings, provided that consumers are guided in their choice by bringing prices into accord with the relevant costs of production and distribution. Particular stress is laid on the policy of pricing because the committee believe this to be one of the main considerations governing the selection of the right type of fuel to give the best returns on the national resources expended in its production.

* Report of the Committee on National Policy for the Use of Fuel and Power Resources. London, H.M. Stationery Office. Price 6s. 6d. net.

Brazil Plans to Refine Copper

(From Our Own Correspondent)

Teresopolis, Sept. 12

The Commission for Industrial Development has appointed a sub-committee to study measures for promoting the industrialization of copper and other non-ferrous metals in Brazil.

The well-known reserves of copper ore are sufficient to feed the projected industry during a number of years and other deposits, not yet examined, are being prospected. The Department of Mineral Production (D.N.P.M.) is investigating an occurrence at Pedras Verdes, in the Vicosa district of Ceará, in collaboration with the owners of the property, and a private company is prospecting at Ribeirao de Eixo, in the Itabirito region of Minas Geraes. Small quantities of 5 per cent ore have been mined at Itapeva, in S. Paulo, where the reserves are estimated at 200,000 tons. Native copper occurs with some frequency in the dibasic basalt of Western Paraná, but although interesting samples have repeatedly been found, the D.N.P.M. does not consider the occurrence to be of economic promise. The deposit at Pedras Brancas, at Picui in the State of Paraiba, is also expected to prove of small value when thoroughly tested.

THE MOST IMPORTANT MINES

The most important mines are those of Camaqua and Seival, in the Camaqua Basin of Rio Grande do Sul, and that of Caraiba in Bahia. The latter, in which copper sulphide is widely disseminated in basic rocks, was partially prospected by the D.N.P.M. in 1945-46. The reserves were then calculated at 10,000,000 tons of proved ore with an average tenor of 1 per cent Cu. In Rio Grande do Sul, in addition to the Camaqua and Seival mines, others exist at Bom Jardim, Crespo, Andradas, Primavera and Cerro Martins, in the Cacapava area, and at Volta Grande, near Lavras. The total reserves of the Camaqua Basin are of the order of 3,000,000 tons, those of the Camaqua mine being calculated at 500,000 tons to a depth of 200 metres, with a 4 per cent Cu content. In other mines of this district the percentage ranges from 1 to 3.

The Camaqua mine was exploited by a Belgian company from 1902 to 1908, when appreciable quantities of blister were exported to Great Britain and other countries. Activities ceased, however, on the discovery of deposits in the Belgian Congo and the decline of world prices. In 1942 surface mining was started at Seival and in 1945 the Camaqua mine was re-opened by Companhia Brasileira de Cobre. It was impossible at that time to obtain machinery to refine the concentrates and both mines closed down on the cessation of hostilities.

COPPER REFINING AN URGENT NEED

The refining of copper has become an urgent need for Brazil. Imports of the primary metal have risen from 7,490 tons in 1938 to 23,128 in 1950 and the demand will continue to expand during the next few years, as the electrification programme will call for increased supplies for the local manufactures of generators, motors, cables and apparatus. On the other hand imports from Europe and North America are liable to be further curtailed and become more costly in view of the international situation.

A preliminary measure to relieve the threat of shortages is being taken in Rio Grande do Sul, where the Companhia Brasileira de Cobre is to be financed by the Federal Government to re-equip the Camaqua mine and produce 72,000 tons of concentrate annually. The concentrates will be transformed into electrolytic copper at the Utinga plant, referred to in *The Mining Journal* of March 25, 1952. The Utinga refinery is being erected under the supervision of Jurgi Gesellschaft fur Chemische und Huttenwesen, of Frankfurt.

A Canadian firm, H. F. Pollock & Co., is also organizing a company, in collaboration with Brazilian industrialists, to refine copper and other non-ferrous metals. The necessary raw materials will be obtained from deposits in Minas Geraes and Bahia, and will be transformed exclusively for home consumption.

Western United States

(From Our Own Correspondent)

Portland, Oregon, Sept. 4

Climax Molybdenum Co. has entered into an agreement with the Government by which it will mine 17,000,000 tons of low grade ore at its Climax mine and receive an over the market price for the molybdenum produced therefrom.

IDAHO

Hecla Mining has started deepening the Atlas shaft from the 800 to the 2,400 level after extensive underground and surface preparation. The development is a joint venture in which Hecla, Newmont and New Jersey Zinc provide the capital and Atlas retains a 25 per cent interest in the project. In the "Dry Silver Belt," toward the westerly end of the Coeur d'Alene district Polaris and Silver Summit have agreed to consolidate their holdings on the basis of three shares of Silver Summit to one of Polaris. Polaris already has stock control of Silver Summit and is in turn controlled by Hecla. Polaris and Silver Summit are also involved in a transaction with Silver Dollar, Lincoln and Hayden Hill by which the five have taken over the Purim group of claims. Polaris, Silver Summit and Silver Dollar already have Lincoln and Hayden Hill under lease and these different agreements will simplify the operation of the several properties, which are contiguous, and make available a large area which can be operated as a unit. Operation presumably will be through Polaris which is the deepest and most extensively developed of the group. Federal Mining and Smelting Co. (A.S. & R.) has completed deepening the shaft of the Morning mine to the 5,200 level and is preparing for lateral development at that level. Coeur d'Alenes Mine Corporation has entered into a contract with Atomic Energy Commission to do diamond drilling to prove the uranium possibilities of its property near Osborn. This is of interest in that the locality is in the heart of a district that has been an active producer of lead, silver and zinc for a half century.

NEVADA

Combined Metals Reduction Co. at Pioche has completed an expansion programme which will increase mine production from 700 to 1,600 tons per day and capacity of its lead-zinc mill from 1,000 to 1,900 tons. It may seem odd to think of Nevada, "the Silver State," as a producer of its lead-zinc mill from 1,000 to 1,900 tons. The company is now building a plant for tungsten ores. Under the stimulus of a demand from Japan at least eight open iron ore pit mines have been put in operation on a general east-west belt through the central part of the state. Developments of the deposits has been held back by the fact that it is not known yet just how long the Japanese demand will be sustained. Present development is expected to maintain an annual output of 150,000 tons.

Radioactivity in Mineral Dressing

By Professor A. M. GAUDIN

The three ways in which radioactivity can be used in the field of mineral dressing: as a research tool; for the control of non-radioactive plant processes; and as a mineral separating tool; formed the theme of the third Sir Julius Wernher Memorial Lecture of the Institution of Mining and Metallurgy delivered by Professor Gaudin, Richards Professor of Mineral Engineering in the Massachusetts Institute of Technology, on September 22 at the Royal Institution. The article which follows has been abstracted from Dr. Gaudin's address, and attempts to feature the salient points of his most valuable and interesting lecture.

Although originally limited to elements of the uranium and thorium radioactive families, it is now well known that radioisotopes of many elements, and in fact all elements, have been synthesized. It is because of the general availability of radioactive elements that radioactivity can play a significant part in mineral engineering.

RADIOACTIVITY AS AN ELUCIDATING TOOL

It has been known for a long time that flotation collection is associated with abstraction of the collector by the mineral from the aqueous solution. Measurements of the extent of this abstraction, however, were not available under normal flotation conditions because the quantities and/or the concentrations involved were so small as to make chemical analysis by standard methods generally unreliable. Indeed, the measurements that were available had been obtained under conditions where the experimenter had been constrained to stress either the time of reaction or the amount of surface of the mineral or the concentration of the solution beyond the range of practice and furthermore had been limited in the selection of problems to those for which relatively good analytical procedures were available.

FLOTATION COLLECTORS

Thanks to the availability of radiocarbon (carbon 14) it is now possible to study the behaviour of any flotation collector, because all flotation collectors contain hydrocarbon chains. It is necessary, of course, to first synthesize the marked collector. This may be fairly easy, as in the case of saturated compounds such as *n*-dodecylamine or of lauric acid, or difficult as in the case of unsaturated compounds such as oleic acid. In any case it is a job for an organic chemist trained in radiochemistry.

After the marked collector has been synthesized, and the activity of the preparation has been measured and standardized, measurements are made of the partition of the agent between mineral and aqueous solution, or between float and non-float solids. This requires the development and perfecting of appropriate analytical techniques for the analysis of solids and of solutions. From a knowledge of the reagent partition, or the so-called "adsorption isotherm," important conclusions can be deduced, with a significant bearing on flotation theory.

Reference may be made to the typical careful work of Dr. P. L. de Bruyn, Mr. F. W. Bloecher, Dr. C. S. Chang and Mr. John Morrow. They have studied the adsorption of marked *n*-dodecylamine and of marked lauric acid on various oxygen minerals, principally quartz. To make quartz float a coating of the collector is required. This coating does not need to be several molecules thick, nor even one ion thick. In fact a coating which is only five per cent as complete as a monolayer provides excellent recovery; and a coating that covers less than one per cent of the surface with a monolayer makes a tangible increase in the amount floated.

The effective amine coating on haematite is of comparable tenuousness, and the same is true of laurate coatings on barium-activated quartz or of sulphhydrate-collected sulphide minerals. It thus seems established that, far from requiring the physically-perceptible development of a new phase or crust on the mineral to be floated, it is sufficient for flotation to adsorb on it a very incomplete monolayer.

An interesting development of this work of Professor de Bruyn and his associates is the establishment of concentration-adsorption curves that relate the amount of agent adsorbed to the concentration of the agent in solution

When the collector ion contains sulphur or phosphorus atoms, it is possible to gain greatly in experimental facility by marking these atoms instead of carbon. Using sulphur marking, a beginning has been made in elucidating the behaviour of xanthates and mercaptans in the flotation of sulphide minerals. Mr. John S. Carr, of the Chemical Engineering Division at Harwell, and Messrs. Dwight Harris and Olav Mellgren are presently engaged in it at the Massachusetts Institute of Technology.

In the same way, using phosphorus-marked alkali dithiophosphates, Messrs. D. J. Salley, D. J. Simard and R. B. Booth and their associates at the Stamford, Connecticut, laboratory of the American Cyanamid Co., have furthered our understanding of how dithiophosphates float sulphide minerals.

Ingenious preliminary experiments by Professor M. D. Hassialis and Mr. Myers at Columbia University, New York City, have demonstrated that adsorbed xanthate ions at galena surfaces diffuse by lateral motion. This suggests the existence at solid-liquid interfaces of sequences of conditions similar to those that prevail at the water-gas interface of other surface-active systems.

FLOTATION ACTIVATORS AND DEPRESSANTS

A beginning has also been made toward an understanding of the action of reagents other than collectors. Thus the activation of sphalerite by copper and silver salts has been explored. Mr. M. P. Corriveau has found that silver forms a coating on the mineral which changes with time.

In another study of activation by Dr. C. S. Chang, double tracing was used, the activator ion and the collector being both radionuclides, yet of different properties. The activator was barium ion for which the isotope barium 140 was used, and the collector was lauric acid marked with carbon 14. Dr. Chang studied these reagents in regard to quartz. He found, when flotation was obtained, that the coating of the activator is always much more extensive than that of the collector, although it also does not need to form a complete monolayer.

Less work, so far, has been done with radiotracers in elucidating the mechanism of depressors, but a beginning is being made now with lime, alkali and cyanide on sulphide minerals. The work that has been done to date shows that the use of radiotracers has brought out an important factor in flotation depression which up to this time was suspected but not actually known with certainty, namely the influence of atmospheric oxygen.

OTHER MINERAL DRESSING FIELDS

Problems in diffusion in the solid state, which are of even greater interest to mineralogists than to mineral engineers, can be handled most elegantly by radiotracers. Some work has been in course, as a matter of fact, by Mr.

William Leavitt under the direction of Professor Patrick Hurley on the diffusion of sodium in feldspar. Problems in ore deposition and particularly in secondary enrichment clearly lend themselves to attack from the radiotracer standpoint.

Again, radioactive marking of ore fragments in gravity concentrating operations should make possible the tracing of mineral paths in devices of various kinds such as jigs, shaking tables or sluices.

Messrs. H. R. Spedden and Douglas Kaufman have shown that radioactive marking can be useful in comminution studies. To this end they graded the feed to a grinding device according to size, removed one of the grades and activated it by exposure to neutrons, then returned the radioactivated lot to the feed material which then entered the grinding mill. Size fractionation of the ground product and measurement of the activity of the various sizes made it possible to discriminate among fragments so as to tell those that came from initially radioactive parents and those that came from inactive parents. In a sense, this use of radionuclides enables one to establish the genealogy of broken fragments. It gives a new tool to comminution research.

RADIOACTIVITY IN PLANT CONTROL

The second group of applications of radioactivity to mineral dressing is in a sense a transition group of applications ranging from inquiries into how a device is operating in a plant to how to control that device, making it operate at the optimum level most of the time.

For example, a heavily adsorbed short-lived radiotracer that gives a strong gamma emission could be used to evaluate the position of the sediment in a thickener. In conjunction with appropriate reagent-feeding devices, or with port-opening devices, this tracer could be used to keep the sediment level continuously at the most appropriate height.

In filtration use could be made of a radionuclide that is not markedly adsorbed for the purpose of evaluating the efficiency of displacement washing, and further to control the flow of wash water so as to maintain the displacement washing at the optimum level.

In flotation or leaching plants radionuclides could fill a place to evaluate tonnages in complex interconnected flows, to estimate the dilution of pulp or liquor flows with added water or joining flows, and the time required for the pulp to pass from one point to another. Steady-state information and control could be had by feeding a steady stream of constant activity at a given point then measuring and maintaining constant the activity at certain other predetermined loci. On the other hand, information as to conditions at a particular time could be had by adding a shot of radioactivity at a given point and time, following this addition by evaluation of the activity as a function of time at various sites in the circuit.

In this group of control uses of radioactivity can be placed the use of radioactivity for analysis of plant feeds of naturally radioactive substances, such as uranium or potassium. Excellent results can be obtained in some cases, not only for batch analyses, but also for the continuous monitoring of pulps at radioactive equilibrium.

RADIOACTIVITY AS A SEPARATING TOOL

The third group of applications of radioactivity to mineral dressing is to the mineral separating step itself. As such, radioactivity would take its place alongside gravity concentration, magnetic separation, electro-static separation and flotation as one of the processes in the repertoire of the practising mineral engineer.

Up to the present the processes have been essentially sorting procedures, but it is hoped that the future will bring the invention of a process in which particles in two or three dimensions are being acted upon simultaneously on the basis of their radioactivity. Such a development would represent a great forward step for radioactivity as a concentrating tool.

A radioactive sorting process was proposed by Dr. Christian Lapointe, of the Canadian Department of Mines and Resources, for the purpose of sorting uranium-bearing pieces from non-uraniferous pieces. This process depends for its operation on the natural differences in radioactivity between uraninite (or pitch-blende) and other minerals. The ore is first sorted according to size; each size is then passed in Indian file, on a belt, under a Geiger-Müller counter. Since each piece is of approximately the same size and affects the counting tube for the same length of time, the tube in effect makes a crude analysis of each and every piece of ore. According to this analysis the tube actuates a relay, or fails to actuate it, and the piece of ore goes to one lot or another. Each piece is thus sorted, according to composition, a mechanized decision having been reached by the counter as to the pile in which the piece should belong.

The Lapointe process is very limited in scope as there are few naturally-occurring elements that are radioactive. In fact it is limited to minerals containing, besides uranium, the following elements: thorium, lutecium, rubidium and potassium. Of these elements only uranium and thorium now look as if they are active enough for treatment by the Lapointe process.

More recently it was proposed by Messrs. John Dasher and James Pannell to utilize in a sorting process not natural radioactivity but induced radioactivity. Briefly, the proposal, which was limited to the concentration of coarse beryllium ore pieces, requires utilization of a nuclear reaction specific to beryllium. This nuclear reaction between incident gamma radiation and atomic nuclei produces neutrons. Since one of the beryllium isotopes may produce neutrons from less energetic gamma rays than any other nuclide, the gamma-neutron reaction can be made absolutely selective to beryllium merely by controlling the energy of the triggering gamma radiation. The neutrons emitted by beryllium are evaluated in neutron-counting tubes and from then on the process is substantially the same as the Lapointe process.

In addition to this highly specialized process it seems possible to base another sorting process on the radioactivity that is induced in atoms as a consequence of their exposure to neutrons. Preliminary aspects of this process have been tested at the Brookhaven National Laboratory, Upton, New York, by Dr. Frank E. Senftle and Mr. Wilfred Freyberger. They have found that different pure minerals have susceptibilities to neutron irradiation that vary enormously, ratios of gamma emission after irradiation of 1,000:1 between minerals being common.

Thus, silver and vanadium minerals gave activities of the order of several million gamma counts per gram, per minute, after a two-second exposure to the Brookhaven neutron flux, while under corresponding circumstances barium and nickel minerals gave activities of the order of several thousand counts only.

Minor impurities in some mineral species give them variabilities within the species of 100-fold or more. Thus galena may range from less than 1,000 counts per minute per gram to 100,000 according to its silver content. Ore pieces of different lithologic character but from the same deposit differ considerably from each other. Thus, apatite, sphalerite and pyrite from the same mine gave activities in the ratios of 200:8:1. It seems, therefore, that the

range of response of ore fragments is entirely adequate, whenever a cheap source of neutrons at the appropriate flux becomes available to provide a practical pre-concentration process. For various minerals, it would seem as if a convenient flux would be of the order of (10^9) neutrons per cm^2 per second. This flux is too high to be attainable with a radium-beryllium source (10^4) and much smaller than that attainable in atomic piles (about 10^{12}). There is therefore no convenient source of the right magnitude available just now. Nevertheless, the time will come when atomic piles will not be entirely of military concern and when we will have learned enough about their construction and operation to provide a flux low enough for a sorting process.

Still another type of process is one depending on the selective adsorption of a radionuclide by one mineral or another. This has been tested briefly by Doctors M. Halfawy and Frank E. Senftle. Minerals of different kinds exposed to a dilute aqueous solution of a radionuclide adsorb it to different extents, thus becoming differentially active. In a subsequent operation they can be sorted as in the other sorting processes mentioned above.

Engineering Features of a Nickel Smeltery

By C. C. DOWNIE

The following article gives a brief account of practical engineering details necessary for operating furnaces for a specific smelting capacity—electrical circuits and their allocation to different units, reduction of motor sizes resulting from experience—associated stack dimensions, foundations used and pumping features for specific ground and water supply conditions, and designs of equipment selected. These factors are not necessarily basic to all nickel smelteries, since in more outlying districts where cheap power can be acquired from nearby hydro-electric schemes, electric smelting is preferred. But nevertheless, despite this advantage, the blast furnace and converter system, being more economical, still holds its own. Published details in the trade and technical Press of nickel smelting from the engineering aspect are not common, while earlier standard works omitted this altogether so that the article which follows should evoke considerable interest.

Engineering problems in a nickel smeltery are generally of a somewhat diversified order depending on the location of the layout, since for reasons of being independent power comes almost exclusively from the boilers, which in turn operate generator sets to supply electric current where required.

In one layout the total steam requirements amounted to some 16,600 lb. per hour for operating the main engine, blower turbines, air compressors, and generator engine; in turn the generator engine supplied current to operate the pumps for dealing with some 75,000 gall. of water per hour. This capacity was necessary for supplying the different blast furnaces, central condensing plant, engine condensers, and air compressor jackets, and other equipment pieces. With experience, the velocity of water in the pipes was increased from 1.12 cu. ft. per second to 4.2 cu. ft. per sec., the water conveniently obtained from an adjacent canal.

THE NATURE OF THE SMELTERY

An indication of the nature of the smeltery can be gathered from the power circuits necessary, which were as follows when a 160 kW generator was included: for the pump circuit for the centrifugal pumps, a total of 50 h.p. with provisions for increasing to 75 h.p.; for the dryer circuit for operating dryer, compressor air pump, and feeding arrangement, a total of 50 h.p.; for the ball mills, 68 h.p. with a spare circuit for 40 h.p. for possible extensions. The conveyor arrangements required 40 h.p., the hoist circuit 35 h.p., and the furnace cranes circuit 30 h.p.

Variables which directly affect this power consumption are revealed where a harder or tougher ore than the standard has to be treated, and where the ore is more refractory in the melting sense, but which must also take into account fluctuations in coke and water consumption. As the slag from the smelting was in demand for tar macadam and other constructional purposes, the largest blast furnace of 200 tons daily capacity was equipped with a travelling electric overhead crane (8 h.p. motor) to remove it from a water pit in granulated condition. This lifted 30 cwt. lots through a height of 12 ft., travelled with the load 70 ft., temporarily set it down on the ground, and once more lifted and raised the load 6 ft. The operation was repeated 10 times per hour. The smaller blast furnaces of 100 and 50 tons daily capacity used slag cranes with motors of 3½ and 2 h.p. respectively. The Krupp mills for pulverizing used both 17 and 18 h.p. motors, while in view of the large amount of dust formed, an exhausting fan for these mills required a 4 h.p. motor. Two 11 h.p. motors were also necessary to operate the crushers.

In view of briquetting troubles with variable moisture contents, many garnierites had to be calcined initially prior to making up with the fluxes, after which the mass was transferred to pan mills for final mixing prior to introduction to the briquetting presses. A battery of six briquetting presses were supplied from six pan mills through a modified elevator device. These pan mills were driven by 3 h.p. motors initially operating at 1,250 r.p.m. and suitably reduced by reduction gear. With these provisions, the attendant had only to charge the mass into the pan mill in each case, and after a fixed period of grinding, shovel it into the connected small buckets of the elevator. This upraised the mass to the hopper of each briquetting press, where the briquettes were made and passed out for smelting directly.

Each bucket handled an average of some 8 lb., although each had been made for greater capacity, and the modified elevator in each instance was operated by a 2 h.p. motor. Thus the total power of the motors to drive the set of six pan mills and their connected elevators amounted to only 30 h.p. In earlier years, much larger capacity motors were used, but with experience it was found that the final mixing was satisfactorily carried out with those mentioned. The briquetting machines were likewise found to operate successfully with reduced power. They required motors of some 8 h.p. only, although an excess of this rating was adhered to as a safety measure.

FURNACE DOWNTAKES, STACKS AND FOUNDATIONS

For the blast furnaces with hearths of 130 by 44 in., the fans used had a rated output of 6,420 cu. ft. per minute at 20 in. water-gauge when running at 900 r.p.m. and the air per sq. ft. of hearth area when operating two of these furnaces—amounting to a total of 79.5 sq. ft.—equalled 81 cu. ft. The downtakes of these furnaces represented an important item, as they also handled cobalt ores, some of which were frequently arsenical, which the work of the scrubber was understood to more or less cleanse. When dry, the flue dust collected in the scrubbers weighed 48 lb. per cu. ft., and was the subject of researches as some of the rarer metals appeared present. The downtakes had an area of 13½ sq. ft., wherein the volume of free air blast supplied amounted to 3.210 cu. ft. per min., with velocity averaging 3.93 ft. per sec.

The largest blast furnace used had a hearth of 240 x 48 in., and the amount of air supplied was calculated on the same lines with the average once more 81 cu. ft. per sq. ft. of hearth area. (The capacities mentioned neglect the factor of temperature.) The stacks connected to the flues from the scrubbers of these different nickel furnaces followed in construction those of steel works to some extent, but differed in measurements. In other words, while the plant embodies familiar steel chimney with brick-lined interior and bottom of the exterior concrete-lined in a conical design, is followed, the measurements differ materially.

For the smaller furnaces, the self-supporting chimneys were at first 100 ft. high, but increased to 130 ft. in keeping with the chimneys for the larger furnaces until all chimneys were eventually constructed to this height. Volume was increased correspondingly to approximately 1,600 cu. ft. These chimneys were supported on concrete rafts of 625 sq. ft. with a total weight of 500 tons. As the nature of the ground was of a clay disposition, and as the pressure permitted by the authorities was not allowed to exceed one ton per sq. ft., these dimensions therefore worked out at 16 cwt. per sq. ft. pressure.

SAFETY PRECAUTIONS NECESSARY

Despite the provisions of the scrubber and the tall chimneys used, the gases emitted still contained minute quantities of arsenic besides sulphur, and as a safety measure, all fields surrounding the smeltery were taken over by the company in order to forestall any possibility of grazing cattle being poisoned. In the converter house, despite the assistance of induced draught fans, there was always a certain small modicum of arsenic present in the atmosphere which was responsible for introducing lock-jaw to the attendants, and although this was not at first evident, all converter attendants in later years were rendered toothless. The matter of foundations for the blast furnaces was more serious, and the largest size for handling 200 ton charges daily could not be constructed on the clay bed. It was necessary to excavate and sink 6 ft. into the ground in order to reach more solid earth. It had been initially proposed to use a foundation of 122 tons, where the weight of the furnace itself was 106 tons, and the furnace charge 40 tons. This totalled 268 tons for a proposed foundation with an area of 222 sq. ft., thereby averaging 1.2 tons per sq. ft. In view of the conditions mentioned, the concrete foundation in the ground was increased to 30 ft. by 13 ft., or 390 sq. ft., and weighed 250 tons, which with the same 106 ton furnace, and 40 ton charge, totalled 396 tons, thus approximating to nearly 1 ton per sq. ft.

With the furnace working 100 ton daily charges, the weight was 53 tons, charge 20 tons, and foundation 66 tons, totalling 139 tons, where the area of foundation was 127 sq. ft., and where the load worked out at 1.1 tons per sq. ft.

GENERAL DETAILS OF THE SMELTERY LAYOUT

The layout of the smeltery was conveniently situated beside a canal where ample water supplies for cooling purposes were available. Along the same canal travelled the barges containing the garnierites, dunites, and other nickel ores. The barges were moved into a capacious side-basin where an extensive conveyor arrangement distributed the ores over a large dumping area, to be uplifted again for transfer to the initial crushing department. Conveyance was carried out on similar lines to barge loading and unloading at coal wharves, and all modern equipments including electro-hydraulically operated grab hydraulic pump, and connected auxiliaries, were installed. In the handling operations, the conveyor circuit involved motors of 40 h.p. while the hoist circuit using another three motors, amounted to a further 35 h.p. This dumping of raw ore was purposely in excess of the possible smelt, and while the furnaces smelted just slightly over 2,000 tons ore per 7-day week, the conveyor could handle 3,000 tons weekly. Working day-shift only, this made provision for possible future extensions of smelting practice. The whole of the conveyor layout was set up by a Continental firm. The flues from the largest blast furnace were 58 ft. in length, 10 ft. in diameter, and in view of the nature of the construction required various beams and supporting columns.

They were equipped with six explosion doors, nine hoppers, and 14 overlaps at the joints in flues, and the total weight amounted to 34 tons. Steam demands fluctuated somewhat markedly in view of fresh water-tube boilers being introduced, and while formerly the maximum demand was 4,080 lb. per hour, for a time this was increased to 16,600 lb. per hour and latterly reduced to 10,800 lb. per hour. In smelting the specific tonnage, annual fuel consumption for the nickel furnaces amounted to 17,405 and 17,640 tons in two consecutive years, besides 3,913 and 4,600 tons for steam raising, and 25 and 28 tons for smithy fires and auxiliaries, giving totals of 21,343 and 22,265 tons respectively.

A WIDE VARIETY OF ELECTRIC PUMPS AND MOTORS

Ore drying was carried out so that while some was completely dry, another portion was left damp to acquire the desired moisture content to ensure reliable briquette manufacture. For a period, this ranged from 55 to 58 tons daily, but fluctuated somewhat according to seasons of the year. A wide variety of electric motors and pumps were tested, as no one type was considered sufficient for the different purposes required. Tangye pumps were mainly preferred for the scrubbers, Siemens hydraulic pumps for the conveyor, Allen electric pumps for pumping water from the canal, and Drysdale pumps for the majority of other purposes. Regarding electric motors, Westinghouse designs were engaged for pan mills, ball mills, crushers, and clay mills, Siemens for the conveyors, and British Thomson Houston designs for the different slag cranes, and induced draught fans. While all refractories were conveniently obtained in the nearby district, a small "pottery" was operated within the smeltery, in order to be independent acquiring stoppers, converter blocks, and other parts of special shape. The boilers used were Babcock & Wilcox designs, one of which was of a unique gas-fired type for intermittent service, while the generators were Belliss & Morcom, and Siemens designs.

In conclusion, the smeltery benefited to no small extent by the introduction of those selected power units, and operations were placed on a system of almost chain belt application. When the smeltery was first set up, the small 10 and 20 ton blast furnaces were arranged in a battery, many of which were fed from a common platform by hand-wheeled barrows, and where a considerable amount of wooden planking was employed, while the briquettes were made manually in individual presses, all of which occupied much labour, and consumed excessive fuel and power.

Added to these troubles was the need for running the blast-matte along lengthy chutes to the converters, which at times involved undue spillages and accidents, not to mention exposure to arsenical-laden fumes. Hence the engineering improvements made it possible to handle larger tonnages in considerably less time and in a more compact plant layout, besides numerous other operational advantages.

COLONIAL MINERALS DEVELOPMENT—XVI

Developing Uganda's Mineral Resources

By A. G. THOMSON

In the following article, which concludes the series devoted to the mineral wealth of the varied overseas British Territories, the author describes the mineral resources of Uganda and the steps being taken to develop them.

The Uganda Protectorate is bounded on the east by Kenya Colony, on the south by Tanganyika, on the west by the Belgian Congo, and to the north by the Anglo-Egyptian Sudan. As the crow flies, the nearest point to the sea is 490 miles. The protectorate has an area of 93,981 sq. miles. Its population, according to the 1945 census, consisted of 2,583 Europeans, 28,512 Asiatics and 3,966,595 Africans.

In 1939 Uganda's mineral exports included gold, tin ore, columbite, tantalite, and small quantities of wolfram and bismuth ore. During the war wolfram exports were stepped up considerably and there was also production of mica, beryl, amblygonite bismutotantalite and phosphates. In 1950 Uganda exported 590 f.oz. of gold and produced 139 l.tons of tin and 3 tons of tantalite and columbite.

Until the establishment of a Geological Survey in 1919, little was known of the geology and mineral potentialities of Uganda. Starting with inadequate facilities, E. J. Wayland gradually built up a department that has made an invaluable contribution to the mineral development of East Africa, and Wayland's work led to the discovery of the Kakamega goldfield.

MINERAL RESOURCES VARIED BUT SMALL

The tempo of mineral development in Uganda has been slow, and so far the indications are that this is a country of diverse but small deposits. Progress has been hampered by the fact that the greater part of the mineral rights in Buganda—which forms 21 per cent of the total area of the Protectorate—are held by numerous African landowners. No minerals were exported till 1927 when cassiterite was first discovered, but by the end of 1945 the value of mineral exports had reached £2,380,000. Mineral development is now likely to be greatly accelerated by the huge Owen Falls power scheme with the consequent demand for cement and other materials.

Tin has been the Protectorate's most consistent mineral export. Cassiterite occurs in veins of quartz and in muscovite and kaolin intrusions. So far all the ore has been won from veins and alluvial deposits in hillsides, but most workings are small and there is only one underground mine.

Though gold was not discovered till 1931, production had reached an aggregate value of nearly £900,000 by the end of 1945. Nearly all the earlier production was obtained from alluvial deposits in the south-west corner of the territory, some of the gravels being phenomenally rich.

Wolfram was discovered by a prospector in the Kigezi district of south-west Uganda in 1931, but was not exploited till 1935. During the war further discoveries were made in the region of the original find, while the Geological Survey also found occurrences in Buganda.

A variety of minerals containing tantalite and columbite are found in the Protectorate, including high grade tantalite and bismutotantalite. A reef in the Ankole district yielded what was probably the world's highest grade tantalite of exportable quantity (83.39 per cent Ta_2O_5).

Huge apatite deposits were exploited towards the end of the war to supply the requirements of East Africa. Some 5,000,000 tons of rock bearing between 8 and 35 per cent P_2O_5 are estimated to occur in the area where quarrying was carried on, but this quantity forms only a small proportion of the probable contents of the deposits as a whole. The phosphate is associated with even larger tonnages of magnetite and a lesser amount of phlogopite mica. The latter has weathered to form vermiculite, which does not appear to be of high grade. It is intended to manufacture "sodiophosphate" by combining the phosphate with the soda of Lake Magadi in Kenya. About 3,000 tons of salt are produced annually in Uganda.

Mica was worked as a small project during the war, while occurrences of beryl in the Buganda area, associated with columbite and other minerals, yielded 18 tons in 1944. Amblygonite occurs in several places in sufficient quantity to be exportable. The high grade sands and clays in Uganda are exported to Kenya for pottery manufacture, and are also used locally.

The problems associated with the development of mineral resources are concerned largely with products which have not yet been exploited. For instance, petroleum is known to occur in the Kaiso and Kisegi beds of the Western Rift. Oil welled up slowly from a hole drilled by a prospecting company in 1939, but operations were prematurely closed down. It is the intention of the Mining Department to do scout-drilling to some 2,000 ft. around the northern nose of Ruwenzori and in the Semliki and Kaiso plains. Considerable work has been done on copper deposits occurring on the flanks of Ruwenzori, which are estimated to contain 1,660,000 tons of ore carrying 4.21 per cent copper, 0.37 per cent cobalt and 0.02 per cent nickel. Exploration was carried down only to about 300 ft., but further work is now being undertaken.

PROSPECTING CONDITIONS NOT EASY

A wide area in Uganda still remains to be examined, but conditions for prospecting are not easy. The Geological Survey has directed its attention to the carbonates of the Tororo neighbourhood, Eastern Province. Final bulk sampling of the calcite rock at the locality quarrying for the cement industry has indicated a considerably higher magnesia content than was anticipated from previous sampling, and this has necessitated a reconsideration of the most suitable areas for quarrying. The shale occurrences have also been investigated by drilling. Banka drilling was undertaken to prove the extension of the soils around Sukulu which contain niobium- and zirconium-bearing minerals. The problem of separating these minerals from the accompanying magnetite and apatite is being investigated.

Routine examinations have been carried out on mining and prospecting activity in tin, wolfram and bismuth in south-west Uganda, and a special investigation was made of the columbite-tantalite deposits in an endeavour to assess their potentialities and working costs. In the Western Province a special investigation of ferberite occurrences in the Kigezi district is being undertaken by the Survey and by a student from the Royal School of Mines.

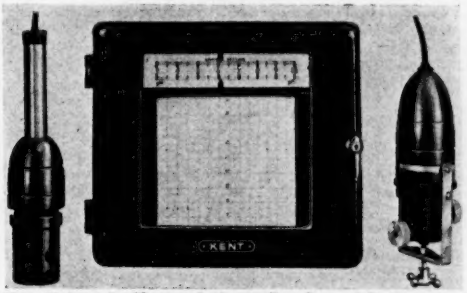
Systematic geological mapping is in progress in the Karagwe-Ankolean rocks of Buganda and in Karagwe-Ankolean and Toro rocks of the Ankole and Toro district. So far no new mineral occurrences have come to light, although conditions are regarded as favourable for the occurrence of deposits of economic importance.

TECHNICAL BRIEFS

New Continuous pH Recorder/Controller

While there is hardly any industry which is not a potential or actual user of pH measurement, the entirely new Universal pH Recorder/controller which George Kent Ltd. are now putting into production will be of particular interest to mineral dressing engineers.

The makers claim that this electronic instrument may quite definitely be regarded as representing a great step forward in its field. For in all previous instruments, the limitations of the normal type of salt bridge have made it impossible to measure accurately the pH value of liquids under pressure. This was because the sample had to be bled at an atmospheric pressure thereby increasing the tendency towards blockage of the sampling supply, particularly when suspended matter was present; and also the metred sample had to be run to waste or pumped back into the supply system at expense and inconvenience. However, in their new Universal Glass Electrode pH Recorder, accuracy is not affected by sampling under pressures up to 75 p.s.i. Moreover, it is held that the instrument will provide accurate and continuous records of pH over periods of several months without any maintenance attention whatever, the addition of potassium chloride solution to the salt bridge being also unnecessary.



New Universal pH recorder/controller. From left to right is shown the Tank-type assembly, Recorder/controller, and Flow-channel assembly

Plug-in electrodes with quick-acting glands represent another feature of this recorder, and is of particular value where the sampling conditions are such as to cause rapid fouling of the electrodes.

The primary element can be used in two ways. The Tank-type can be arranged so that the electrodes just dip into the liquid to be measured, or the electrode system can be completely submerged. By simple replacement of accessories the Tank-type can be converted into the Flow-type in which the liquid to be measured flows through a sealed hopper fitted on to the electrode holder. This type may be used for measurement under pressure. With regard to the electrodes, the three types of glass electrode, presented in the table below, cover virtually the full theoretical range of the pH scale:

Electrode	*pH range*	*Temperature range*	*Estimated continuous life before servicing*
General purpose	0—10	<50° C.	Over 6 months.
High-temperature	0—14	50°—100° C.	About 2,000 hours at 100° C.
High pH	10—14	<75° C.	More than 2,000 hours.

A nickel resistance thermometer, protected by a moulded rubber sheath, provides automatic temperature compensation for the electrodes.

The measuring system is in two parts and comprises an electrometer and a recorder. A special impulse-type electrometer operated from A.C. mains, measures the potential of the electrode system and can be mounted up to 100 ft. away from the primary element, while the self-balancing potentiometer recorder may be located up to 500 ft. away from the electrometer. One most important effect of the new instrument which the makers stress is that it enables automatic control to be applied for the first time to a number of industrial processes. For example, in those processes involving the circulating of hot process liquor, automatic control can be achieved pneumatically with the aid of this new Universal recorder.

"Libra" Boxwood Scales—an Improved Tool for Draughtsmen

A new process, developed originally by Hilger and Watts for the production of highly accurate plastic-based scales ("Presrules"), has been applied by the company with advantage to the manufacture of precision boxwood scales. The improved scales will be marketed under the brand name of "Libra" and will be identifiable by their clear, fine gradations and an accuracy well above the British Standard specification, BS.1347:1947, being guaranteed by the makers to be within ± 0.0005 in. over a foot.

The essential detail, which gives substance to the maker's claim that these "Libra" scales will soon become well known to users of draughtsmen's scales, lies in the company's development of a technique which supplants the normal method of producing boxwood scales in which the engraving of the boxwood blank was carried out directly by means of a dividing machine. This method resulted in the production of lines which, even when fine, were usually ragged and often irregular and diffuse. Indeed, the limiting factor in this method was the maintenance of optima operating conditions for the dividing machines under which accuracy could be ensured to the limits necessary to avoid individual errors.

The new technique reflects the company's long realization that a better process would be that of transferring the lines by some means to the boxwood blank from a high precision master, cut under laboratory conditions. This was, in fact, accomplished and by this new technique masters are cut on a Watts dividing machine, such as is used for the production of high precision calibrating standards, and the conditions under which the dividing takes place are maintained to the same fine limits as for this purpose. The process takes about six hours and the resulting master is accurate to within 0.001 in. over a foot length which is considerably higher than could be obtained by dividing the rules directly under commercially practicable purposes. Finally, this scale is transferred to blanks of well-seasoned West Indian boxwood, which has been found able to maintain the required accuracy under conditions of continual use.
M & E (Not this week)

The Recovery of Vanadium and Phosphorus

Banning and Rasmussen (*U.S. Bur. Mines, Rept. Invest. No.* 4822, 1951) have described processes for the recovery of phosphorus and vanadium from the ferro-phosphorus obtained from western phosphate rock. The separation of vanadium as a carbide dross by saturating the molten ferro-phosphorus with carbon proved to be unsatisfactory and the technique which showed the most promise was a roast-leach process. The method is to roast the ferro-phosphorus with sodium chloride and sodium carbonate. The roast is leached with water and the phosphorus crystallized out as sodium phosphate. Vanadium is then recovered from the phosphorus-free solution by hydrolysis. According to the authors, up to 95 per cent of the vanadium and 96 per cent of the phosphorus can be recovered by this method.

An Electrochemical Magnetic Method of Mineral Separation

An interesting new technique in mineral separation has been described by H. C. G. Vincent (*Nature* 167, 1074). Minerals which have a naturally high electrical conductivity are coated electrolytically with iron thus rendering them magnetic. The coated mineral may then be separated magnetically from other minerals present which are non-conducting. The iron may be removed with dilute acid after separation has been achieved. By this means pyrite, galena, native metals, copper sulphide ores, arsenopyrite and graphite may be separated from such minerals as apatite, barite, quartz, silicates, haematite, ilmenite, zircon, etc.

New Austrian Mining Plant

A viscous ore-dressing plant capable of handling 3,000 tons of fine grain ore rock daily has been installed at the Styrian iron ore mines. The plant, which removes the sterile mass from the ore, was built with the aid of E.R.P. funds. The Alpine Montangesellschaft has found the new plant extremely satisfactory and intends to instal a second similar plant with a daily capacity of 6,000 tons.

METALS, MINERALS AND ALLOYS

The two candidates in the U.S. Presidential elections have now made clear their attitude towards the Taft-Hartley Act. At the beginning of the month, Mr. Adlai Stevenson stated categorically that he was opposed to the Act and he wanted clarification of a number of points, especially Presidential intervention when voluntary agreement failed. General Eisenhower, on the other hand, has told the American Federation of Labour that he supported amendments to the Law, but not its repeal. He would not, however, support any weakening of the rights of working men and women . . . and he denied that he wanted union-busting, an action which the General believes is possible under the present Law. Both the great unions, the A.F. of L. and the C.I.O., have pledged their support to Mr. Stevenson.

The interim agreement between the United Mine Workers and the anthracite producers has been followed by the adoption of a new contract with the soft-coal owners giving the miners $1.90 extra per day and an addition of 10c. per ton royalty to be paid into the welfare fund. These concessions will obviously prove advantageous when the union leaders negotiate a more permanent settlement with the anthracite producers. The steel producers and the public generally is not likely to use the word "advantageous," however, when contemplating the effect which this agreement will have on prices.

COPPER.—The demand in the U.S. for copper has been further frustrated by an announcement that the National Production Authority has reduced the October allocations to a total of 120,000 tons (72,000 tons domestic and 48,000 tons imported). The difficulties created for the copper consumers have led to the institution of a review of the demand-supply situation. The Defence Production Administration has, however, already announced that copper and aluminium allocations for the first quarter of 1953 will not be changed and that producers of consumer durable goods will obtain 50 per cent of the copper they used in the base period of the first half of 1950.

Some progress has been made in reaching a settlement in the wage and salary dispute of the Rhodesian copper-belt. The Salaried Staff Association has come to an agreement with the four mining companies and there is a distinct possibility of the wage claim by the white mine workers being referred to an arbitrator.

Four years' work was completed when the power grid connecting the four main mines in the Rhodesian copper-belt with a central switching station near Nkana came into operation.

The comparatively small strike in the U.S. brass industry appears to be nearing its end, since both sides are prepared to make concessions. But a strike has broken out at the Calumet and Hecla Consolidated Copper Mine. This is the company which has negotiated an increase in the price of domestically produced copper.

TIN.—Production by the Texas smelter was reduced to 3,600 tons in the second quarter of the year bringing the half year's total to 9,002 tons. However, continued deliveries on R.F.C. purchase contracts more than made up for any deficiency in supplies to the U.S. In the second quarter metal imports were 28,262 tons, more than three times greater than in the Jan./Mar. quarter; being derived from Malaya, the Netherlands, U.K., Belgium and the Congo. Imports of concentrates in the second quarter totalled 4,747 tons, nearly double the Jan./Mar. figure and supplied chiefly by Indonesia and Thailand. Consumption in the second quarter was about 5,000 tons down, increasing commercially available stocks to 44,911 tons, an increase of over 8,000 tons in the quarter.

Next week the committee on nationalising Bolivia's tin industry is due to make its report, but any doubts as to its recommendations seem to be finally removed by the statement of the Bolivian representative at the meeting on the International Monetary Fund and World Bank in Mexico City that his Government had definitely decided to nationalise the three principal tin producing concerns in the Republic. At the same time an agreement was announced between the Estensoro Government and Argentine interests by which the latter are granted a 25 year monopoly of tin smelting. Whether, however, this will prove more realistic than the contract entered into some years ago for the supply of 8,000 tons of metal in concentrates to the Argentine remains to be seen but the announcement of this agreement seems to suggest a certain parallelism with Dr. Mossadeq's efforts to wriggle round the difficulties of disposing of Persian oil. So far as the United States are concerned the big increase in imports from countries other than Bolivia referred to above seems the obvious answer especially as the metal can be more cheaply produced than from the Longhorn smelter.

ZINC.—U.S. traders have been notified that the Government is again proposing to stockpile zinc and the G.S.A. has announced a price of 13½c. A leading smelter has reduced its price to this figure but other producers seem still to be holding out for 14c. The steel strike caused a big accumulation of metal.

Early in the week the Ministry of Materials followed the U.S. drop by reducing its price from £126 to £122 per ton.

ALUMINIUM.—The new 85,000-s.ton smelter of Alcoa at Wenatchee in Washington State has been formally opened and although all construction is not yet completed initial output was begun last June. The President, Mr. Wilson, said that by the end of next year the United States domestic producing capacity will be close on 1,500,000 s.tons with corresponding increase in the number of fabricators of the metal.

According to Mr. Harry Schwartz of the *New York Times* the Soviet expansion programme is designed to exceed last year's Canadian production of 441,741 s.tons by 1955. The Soviet, he believes, produced about 200,000 s.tons in 1950 and between 220,000 and 250,000 s.tons last year with an indicated target for 1955 of 520,000 s.tons. It has been stated in Germany that some 60 per cent of the present output comes from the two Urals plants at Krasnoturinsk and Kamensk-Uralsky near Sverdlovsk. Two major plants in European Russia, one at Volkhov near Leningrad and the other at Zaporozhe have been re-equipped since the war and there are smaller plants at Kandalaksha in the Murmansk and at Yerevan in Armenia. A hydro-electric power scheme is to be developed in the Angara River area in Siberia presumably to supply a smelter in that area.

ANTIMONY.—The U.K. price of antimony ore has slipped back a little; it is now quoted at 21s.—23s. nom. 60 per cent good sulphide per unit c.i.f. as compared with the previous quotation of 22s. 6d. to 24s. nom.

NICKEL.—The head of the G.S.A., Mr. Jess Larson, has announced that the Nicaro plant in Eastern Cuba is now in full operation with a capacity of 15,000 s.tons of nickel oxide. Operation is by the Nickel Processing Co. in which National Lead holds a 60 per cent interest. Research is being conducted in a pilot plant to improve extraction and recover cobalt values.

QUICKSILVER.—After last week's improvement in the U.S. price of quicksilver, the New York quotation has gained further ground to $193—$195 nominal per flask. This price movement is ascribed by New York trade circles to a shortage of spot material. It is understood that large quantities are freely available from 30 days to 90 days at $187 or even less per flask.

India, which is said to hold a stock of 23,000 flasks acquired —at between £23 and £28—at the outbreak of the Korean war is expected to shortly withdraw its embargo on exports.

TUNGSTEN.—U.S. production increased in the second quarter of the year by 14 per cent to 1,812 s.tons of 60 per cent concentrates, and imports by 8 per cent. Chief importing countries were Bolivia 426, Portugal 422, Korea 344, Burma 245, Spain 149, Thailand 133, Australia 100 s.tons. Imports for the six months totalled 3,767 s.tons with Portugal leading. Consumption recently has been on a declining scale. Marketing, there is nothing fresh to note.

The London Metal Market

(From Our Metal Exchange Correspondent)

Another week has passed without any special feature in the tin market. Price fluctuations have been modest, but the undertone remains firm. Consumers have not been buying much recently, and it may be that some activity from this direction can be looked for in the near future, but it will not necessarily be anything very spectacular. In the East there has been a steady demand, and

here again price fluctuations have been moderate. It is understood that the R.F.C. have been negotiating for the supply of concentrates with those authorized to act on behalf of the Bolivian Government without coming to any agreement. It has been stated that a tin smelter is to be erected in Bolivia, but whether such a project can be successfully carried through remains to be seen. Presumably supplies of high-grade concentrates would have to be assured for the purpose of sweetening the low-grade Bolivian material.

The Chilean price of copper is still 35½c. f.a.s., and as supplies of copper in sight are reported to be less than the U.S. allocations, this price may very well be held for some time yet.

The unexpected rise of ½c. in the zinc price last week apparently did not stimulate demand, and the quotation is now back to 14c. again.

Business in lead here is slow pending the re-opening of the London market, when supplies for the earlier deliveries will be available from Government stocks. The price at which these will be on offer will no doubt depend upon the level at which quotations settle down after the commencement of free dealings.

On Thursday the official close on the tin market was :—Settlement price £959, Cash Buyers £957 10s., Sellers £959; Three months Buyers £947 10s., Sellers £948 10s. In the afternoon the market was firm. Turnover for the day was 80 tons. Approximate turnover for the week was 505 tons.

The Eastern price on Thursday morning was equivalent to £981 15s. per ton, c.i.f. Europe.

U.K. METAL & MINERAL IMPORTS—AUGUST

	Units	*August 1952*	*Jan.-Aug. 1951*	*Jan.-Aug. 1952*	*Increase or decrease in 1952 over 1951*
Non-ferrous metals and manufactures:					
Aluminium and alloys...	Cwt.	452,453	2,189,296	3,159,961	+970,665
Bismuth*	Lb.	3,484	415,220	404,772	− 10,448
Cadmium	Lb.	139,837	1,070,638	1,245,099	+174,461
Cobalt and alloys	Lb.	298,500	2,439,763	2,194,059	−245,704
Copper:					
Electrolytic	Tons	18,208	159,266	150,510	− 8,756
Other	Tons	21,065	84,274	110,767	+ 26,493
Lead	Tons	7,150	98,794	103,377	+ 4,583
Mercury	Lb.	38,028	1,129,083	464,368	−664,715
Nickel	Cwt.	9,862	63,149	84,493	+ 21,344
Tin	Tons	154	5,294	2,558	− 2,736
Zinc	Tons	21,034	75,464	159,627	+ 84,163
Ores and Concentrates:					
Antimony ore and conc.	Tons	1,288	15,858	15,736	− 122
Bauxite	Tons	15,205	242,232	175,074	− 67,158
Chromium ore	Tons	15,159	93,062	121,337	+ 28,275
Iron pyrites†	Tons	27,210	200,634	302,976	+102,342
Manganese ore	Tons	33,532	261,418	281,894	+ 20,476
Molybdenum ore	Cwt.	3,879	34,701	50,654	+ 15,953
Nickel ore, conc. & matte	Tons	3,429	24,364	23,859	− 505
Tin ore and conc.	Tons	3,940	29,445	36,709	+ 7,264
Titanium:					
Ilmenite	Tons	10,923	62,375	78,274	+ 15,899
Other sorts	Tons	475	6,238	5,993	− 245
Tungsten ore	Tons	672	2,768	5,475	+ 2,707
Zinc ore and conc.	Tons	15,592	113,894	106,663	− 7,231
Non-metalliferous mining products:					
Asbestos	Tons	11,215	74,754	83,596	+ 8,842
Magnesite	Tons	1,417	17,233	16,510	− 723
Sulphur	Tons	28,542	277,383	294,629	+ 17,246

*Excluding bismuth alloys. †Including cupreous iron pyrites.

Iron and Steel

Less stringent conditions are developing in regard to steel supplies. It is true that many industries are in arrears with their commitments through lack of steel, but the rise in home production and also in imports has made possible a general increase in the allocations for Period IV which begins on Wednesday next. An extra 5 per cent of steel—in the case of the shipyards the additional percentage amounts to 8 per cent—is not very much, and it is suggested that the authorities could be much more generous. Producers have now over 750,000 tons of steel in stock, and at a time when supplies are so urgently needed it seems to be plain commonsense that this material should be put into circulation.

Backed by a bigger output of pig iron and more liberal supplies of scrap, the steel makers have accomplished a spectacular expansion of production since the holidays and expect to do even better in the fourth quarter of the year. With a similar expansion of output in Europe and also in U.S.A. it seems not unlikely that within the space of a few months there may be a world surplus of steel, the certain consequence of which would be a phase of keen competition in the export markets.

This, however, is not a source of immediate anxiety. British export prices are at a competitive level abroad, and the home demand is far in excess of current deliveries.

The recent acceleration of the imports of steel semis from Western Europe has given a welcome impetus to the re-rolling industry. Billets are more plentiful and the mills engaged in light sections and small bars are working on a full-time basis. Sheet mills are simply overwhelmed with orders. Export quotas to the end of the year are fully taken up and home requirements are very heavy.

Stock returns indicate a considerable improvement in the supply of iron and steel scrap from home sources. There is not much more foreign material coming in, but home-bought scrap is definitely more plentiful. Steelworks' stocks are bigger than they have been for twelve months past, and there are now fewer enquiries from the foundries for cast iron scrap.

An announcement issued by the Ministry of Supply reveals that the total compensation for the 146 agreed securities under the Iron and Steel Act, 1949, has now been finalized at approximately £245,800,000.

SEPTEMBER 25 PRICES

COPPER

Electrolytic ... ... £285 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid ... ... £131 0 0 d/d
Soft empire ... ... £131 0 0 d/d
English lead ... ... £132 10 0 nom.

ZINC

G.O.B. spelter, foreign, duty paid ... £122 0 0 d/d
G.O.B. spelter, domestic... ... ... £122 0 0 d/d
Electrolytic and refined zinc ... ... £126 0 0 d/d
Special high grade ... ... £128 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over ... ... £225 per ton
Crude (70%) ... ... £210 per ton
Ore (60% basis) ... ... 21s. — 23s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... ... £454 per ton

OTHER METALS

Aluminium, £157 per ton.
Bismuth, 18s. lb. (min. 2 cwt. ex-warehouse).
Cadmium, (Empire) 14s. 4d. lb.
Chromium, 6s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £65 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) 2s. 2d./2s. 3d. per lb. d/d
Osmiridium, £35 oz. nom.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.
Platinum, £27/£33 5s. nom.
Rhodium, £45 oz.
Ruthenium, £30 oz.
Quicksilver, £64 10s. ex-warehouse
Selenium, 25s. nom. per lb.
Silver 73d. f.oz. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth ... ... 60% 9s. lb. c.i.f.
50% 8s. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £14 2s. per ton c.i.f.
,, ,, (concentrates) £14 2s. per ton c.i.f.
,, ,, Refractory £13 14s. per ton c.i.f.
Baluchistan Metallurgical ... £15 8s. per ton c.i.f.
Magnesite, ground calcined ... £26 - £27 d/d
Magnesite, Raw ... ... £10 - £11 d/d
Molybdenite (85% basis) ... 105s. 10d. per unit c.i.f.
Wolfram (65%) ... ... 425s. c.i.f. U.K. buying
,, ,, ... 447s. 6d. d/d U.K. selling
Tungsten Metal Powder (for steel manufacture) ... 31s. 7d. nom. per lb. (home)
Ferro-tungsten ... ... 28s. 7d. nom. per lb. (home)
Carbide, 4-cwt. lots ... ... £32 3s. 9d. d/d per ton
Ferro-manganese, home ... £49 0s. 8d. per ton
Manganese Ore U.K. (48% - 50%) ... ... 6s. per unit
Brass Wire ... ... 2s. 9d. per lb. basis.
Brass Tubes, solid drawn ... 2s. 3½d. per lb. basis.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

It was another bad week for markets. Idle conditions were followed by a sudden fall in gilt-edged stocks. It is difficult to trace this to any one cause. Selling, where experienced, was comparatively small, but prices were continually marked down on sentiment. While the Government's policy to curtail private expenditure has been successful, little seems to have been done in curtailing the Government's own expenditure, which continues at an alarming rate. There is a heavy budget deficit for the first half of the current year. The East African issue proved a flop; 70 per cent of the stock was left with the underwriters and dealings took place at 1½ per cent discount.

Kaffirs encountered very idle conditions. There was little selling but no interest at all. The week ended on a slightly better note when most leading stocks recorded slight rises, apparently as a counterbalance to the falling gilt-edged prices. The General Mining Preference issue has been launched at a rather difficult time, but it is hoped that the conversion rights will prove attractive. There is, however, still a strong propensity among investors to avoid South Africa at any price. Randfontein shares improved above the lowest levels. The chairman proposes to ask shareholders for powers to increase the company's borrowing so as to meet the cost of establishing uranium and sulphuric acid plants. Doornfontein eased in Johannesburg following rumours of water trouble at the mine.

In the O.F.S. some of the leading shares recovered after last week's heavy falls, but here again there was little real interest.

West Africans remained dull until Wednesday when the announcement that the Ashanti interim dividend was to be maintained at 25 per cent caused a sharp recovery of 1s. 3d. in the price of the shares. The rest of the market cheered up and went ahead. The Ankobra River Power Co. have declared a maiden interim dividend of 5 per cent. This concern supplies electricity to several West African mines which own it jointly.

Among Australian gold shares despondency reigned. The chairman of Boulder Perseverance gave a gloomy picture of the inflationary situation in the Commonwealth and its effect upon rising costs. In this connection, the Kalgoorlie Electric report recorded another very bad year; earnings failed completely to cover the debenture interest. The transport situation greatly hindered the company by restricting fuel supplies.

Diamond shares showed little change but slight improvements in De Beers and Consolidated Diamonds underlined the continued high level of sales of industrial stones to cover re-armament and stockpiling. Reports from the United States indicate that inflationary influences are still very strong.

Coppers fell although mostly finishing above the lowest. Exceptionally, Rhodesia Selection and Roan Antelope were harder following hopes of emigration, and good development reports from Rhodesia during the next few months. Rhodesia Katanga ended the week unchanged after touching 16s. At this level profit-taking was encountered.

Lead zinc shares were out of favour. The cut of £4 in the U.K. price of zinc, followed by a further fall in the price of American zinc, had its effect on this market.

South African Collieries were slightly firmer, but manganese and asbestos shares were all lower, the latter following the general trend of industrials in the market. Consolidated Murchison were also down on the weaker antimony position.

Among tin shares, Beralts were again strongly in the lead. Investors reconsidering the financial position and current yield, which is around 30 per cent, came in as buyers. The chairman of London Tin reminded shareholders of the serious reserve position of many Eastern mines. Political difficulties, taxation and the impossibility of prospecting have brought the average known life of properties down to about 15 years. His speech put a damper on Eastern issues although Siamese and Bangrin Tin both went ahead on the increased dividends and higher profits. Bangrin is paying a total of 70 per cent for the year and Siamese 150 per cent. Nigerian producers were firm.

	Price	+ or −
FINANCE	*Sept. 24*	*on week*
African & European	2½	
Anglo American Corpn.	6¼	
Anglo-French	19/4½	
Anglo Transvaal Consol.	26/3	
Central Mining (£1 shrs.)	33/-	
Consolidated Goldfields	43/9	
Consol. Mines Selection	25/7½	
East Rand Consols	2/6	
General Mining	3⅜	
H.E. Prop	32/6	
Henderson's Transvaal	10/4½	
Johnnies	2¾	
Rand Mines	4¾	
Rand Selection	39/4½	
Strathmore Consol.	28/9	
Union Corp. (2/6 units)	31/10½	
Vereeniging Estates	3⅛	
Writs	30/-	
West Wits	42/6	
RAND GOLD		
Blyvoors	40/9	−1/-
Brakpan	17/-	−6d
City Deep	31/3	−1/10½
Consol. Main Reef	32/6	−7½
Crown	40/-	
Daggas	3¼	
Doornfontein	28/-	−8d
Durban Deep	3¼	−⅛
E. Daggas	18/-	−1½d
E. Geduld (⅘- units)	40/6	−1/4½
E. Rand Props	3⅝	−⅛
Geduld	5⅛	−⅛
Govt. Areas	12/6	−1½d
Grootvlei	29/3	−9d
Libanon	12/-	−3d
Luipaards Vlei	21/3	
Marievale	25/-	
Modderfontein East	22/6	
New Kleinfontein	27/6	
New Pioneer	14/3	−1/-
Randfontein	23/-	−3d
Robinson Deep	12/-	
Rose Deep	23/9	−1/3
Simmer & Jack	5/10½	−1½d
S.A. Lands	37/6	−7½d
Springs	7/-	−1½d
Stilfontein	24/10½	−4½d
Sub Nigel	2½	−⅛
Van Dyk	13/-	
Venterspost	18/9	−6d
Vlakfontein	16/9	−3d
Vogelstruisbult	28/-	−3d
West Driefontein	6	+⅛
W. Rand Consolidated	51/3	−1/3
Western Reefs	42/6	−7½d
O.F.S.		
Freddies		−⅛
Freddies N.		−⅛
Freddies S.		
F.S. Geduld		
Geoffries		−1/6
Harmony		
Loraine		−7½d
Odendaurg Estates		−1½d
Merriespruit		−⅛
Middle Wits		
Ofsits		−1½d
President Brand		−⅛
President Steyn		−⅛
St. Helena		
U.F.S.C. & G.		
Virginia Ord.		+7½d
Welkom		+⅛
Western Holdings		−9d
WEST AFRICAN GOLD		
Amalgamated Banket		
Ariston		
Ashanti		
Bibiani		
Bremang		
G.C. Main Reef		
G.C. Selection Trust		−⅛
Konongo		−6d
Lyndhurst Deep		−⅛
Marlu		−1½d
Taquah & Abosso		−1/4½
AUSTRALIAN GOLD		
Boulder Perseverance		−1½d
Gold Mines of Kalgoorlie		−9d
Great Boulder Prop.		−3d
Lake View and Star		
Mount Morgan		
North Kalgurli		
Sons of Gwalia		
South Kalgurli		−1/-
Western Mining		−3d
MISCELLANEOUS GOLD		
Cam and Motor		−7½d
Champion Reef		−1½d
Falcon Mines		−4½d
Globe & Phoenix		−⅛
G.F. Rhodesian		
London & Rhodesian		−6d
Motapa		−3d
Mysore		−3d
Nundvdroog		+⅛
Ooregum		−1/3
Oroville		−7½d

	Sept. 24	on week
	Price	+ or −
Freddies	7/-	−3d
Freddies N.	7/3	−3d
Freddies S.	7/-	−3d
F.S. Geduld	2⅝	−⅛
Geoffries	16/3	+3d
Harmony	19/-	−1½d
Loraine	7/-	
Odendaurg Estates	10/6	
Merriespruit	4/-	−3d
Middle Wits	15/9	−3d
Ofsits	40/3	−1/-
President Brand	20/-	+1½d
President Steyn	18/3	+4½d
St. Helena	16/-	−6d
U.F.S.C. & G.	6/1⅛	−3d
Virginia Ord.	12/9	−1½d
Welkom	24/4½	−1½d
Western Holdings	3⅝	−⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/7½	
Ariston	6/1½	
Ashanti	18/-	+7½d
Bibiani	6/-	−4½d
Bremang	2/4½	−1½d
G.C. Main Reef	3/10½	−1½d
G.C. Selection Trust	7/-	−1½d
Konongo	2/4½	−1½d
Lyndhurst Deep	1/-	
Marlu	1/6	
Taquah & Abosso	3/3	−1½d
AUSTRALIAN GOLD		
Boulder Perseverance	2/3	−1½d
Gold Mines of Kalgoorlie	10/1½xd	−4½d
Great Boulder Prop.	5/4½	
Lake View and Star	16/9	−9d
Mount Morgan	19/-xd	−1/-
North Kalgurli	12/3	
Sons of Gwalia	7/9	
South Kalgurli	7/7½	−4½d
Western Mining	8/10½	
MISCELLANEOUS GOLD		
Cam and Motor	40/7½	−1/4½
Champion Reef	6/6xd	
Falcon Mines	9/-	
Globe & Phoenix	24/3	
G.F. Rhodesian	6/6	−6d
London & Rhodesian	5/3	−3d
Motapa	2/-	−1½d
Mysore	3/6xd	−3d
Nundydroog	5/6xd	
Ooregum	2/7½	
Oroville	11/3	−3d

	Price	— or —
MISCELLANEOUS GOLD (contd.)	*Sept. 24*	*on week*
St. John d'El Rey	25/6	−1½d
Zams	38/-	
DIAMONDS & PLATINUM		
Anglo American Inv.	4⅜	
Casts	29/6	−3d
Cons. Diam. of S.W.A.	4⅜	
De Beers Defd. Bearer	68/9	+3d
De Beers Pfd. Bearer	14¼	
Pots Platinum	9/3	−1½d
Watervaal	15/-xd	
COPPER		
Chartered	61/-	−1/9
Esperanza	4/3	
Indian Copper	4/6	−1½d
Messina	4⅜	
Nchanga	7⅛	−⅛
Rhod. Anglo-American	61/3	−1/10½
Rhod. Katanga	15/7½	
Rhodesian Selection	21/1½	+1/1½
Rhokana	22⅜	
Rio Tinto	25⅛	
Roan Antelope	15/1½	+4½d
Selection Trust	45/6	−1½d
Tzaks	61/3	−6d
Tharsis Sulphur Br.	45/-	−1/3
TIN (Eastern)		
Aver Hitam	25/3xd	−1½d
Bangrin	8/9	+4½d
Gopeng	11/-	−3d
Hongkong	6/9	
Ipoh	21/10½	−7½d
Kamunting	12/3	+3d
Kepong Dredging	7/7½	
Kinta Tin Mines	12/14xd	−1½d
Malavan Dredging	23/-	
Pahang	16/6	−1½d
Pengkalen	9/6	−6d
Penang	14/4½	+1½d
Rambutan	12/6	
Siamese Tin	23/6	+2/3
Southern Kinta	15/7½	−1½d
S. Malavan	27/-	+6d
S. Tronoh	13/3xd	−6d
Sungei Kinta	18/9	−9d
Tekka Taiping	7/6	
Tronoh	23/9	−10½d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	11/10½	+1½d
Beralt Tin	32/4½	+2/3
Bisichi	5/-	+1½d
British Tin Inv.	15/-	−9d
Ex-Lands Nigeria	5/6	+4½d

	Price	+ or −
TIN (Nigerian and Miscellaneous) contd.	*Sept. 24*	*on week*
Geevor Tin	14/-	−3d
Gold & Base Metal	3/7½	+1½d
Jantar Nigeria	12/-	+6d
Jos Tin Area	10/3	+3d
Kaduna Prospectors	4/-	
Kaduna Syndicate	4/9	
London Tin	5/6	−2½d
United Tin	3/-	+3d
SILVER, LEAD, ZINC		
Broken Hill South	50/6	
Burma Corporation	1/10½	+1½d
Consol. Zinc	28/9	−3d
Lake George	15/3	−1/-
Mount Isa	38/9	−1/9
New Broken Hill	26/6	−1/-
North Broken Hill	61/9	+6d
Rhodesian Broken Hill	18/4¼	−1½d
San Francisco Mines	31/-	
Uruwira	4/3	−9d
MISCELLANEOUS BASE METALS & COALS		
Amal. Collieries of S.A.	48/9	+9d
Associated Manganese	43/3	−1/-
Cape Asbestos	18/6	−9d
C.P. Manganese	49/-	−3/-
Consol. Murchison	30/-	−9d
Mashaba	8d	
Natal Navigation	3⅝	+⅛
Rhod. Monteleo	13/3	−3d
Turner & Newall	90/-	−2/-
Wankie	18/-	−3d
Witbank Colliery	2¾	
CANADIAN MINES		
Dome	$39	
Hollinger	$31	
Hudson Bay Mining	$119	−$1
International Nickel	$84⅛	+$1⅛
Mining Corpn. of Canada	£5⅛	
Noranda	$158	+$2
Quemont	£7⅛	−£⅛
Yukon	4/6	
OIL		
Anglo-Iranian	5⅛	−⅛
Apex	44/4½	−7½d
Attock	21/10½	+1½d
Burmah	44/6	−1/3
Canadian Eagle	32/9	−6d
Mexican Eagle	24/3	+3d
Shell (bearer)	84/3	−1½d
Trinidad Leasehold	30/6	+3d
T.P.D.	26/10½	+1½d
Ultramar	32/3	+7½d

COMPANY NEWS AND VIEWS

"Johnnies" Maintains Dividend Income

The full report and accounts of Johannesburg Consolidated Investment Co. for the year to June 30 last, reveals that investments declined by £1,369,166 to £10,500,852. In this connection a note in the balance sheet states that a net amount of £923,135 arising from the adjustment of the values of investments has been deducted from investment reserve. In the previous year the sum of £157,913 was credited to that reserve.

Current assets totalled £2,671,952 (£3,185,864) and included stocks and sundry stores in hand of £23,985 (£17,227), loans of £92,607 (£364,924), dividends and debtors (including amounts owing by subsidiary companies of £8,658) of £249,070 (£487,442), tax reserve certificates, nil (£300,000) and cash amounting to £2,306,290 against £2,016,271.

Current liabilities aggregate £1,452,050 compared with £1,263,936, while the company's revenue reserves and surplus amounted to £7,790,344 compared with £8,187,687.

Turning to the profit and loss account, the relevant figures for which were given in our issue of August 1, it was shown that dividends, profit on realization of investments, fees, and sundry revenue during the year to June 30 last, decreased from £1,745,120 to £1,598,221. Both these figures were arrived at after deducting administration expenses, but excluding directors' remuneration. After providing £59,932 against £56,579 for this latter item, the sum of £90,000 (£56,589) for gross interest on unsecured loan stock, and £4,052 (£3,305) for depreciation, profit before tax, as previously announced, was £1,444,237 compared with £1,628,647 for the preceding year.

The general tendency for Kaffir dividends to decline led some to believe that the decline in "Johnnies" total revenue by £146,899 to £1,598,221 was due to a constriction of dividend income, but in fact, this was not the case as the company's income from this source totalled £1,244,562 compared with £1,250,457. Thus it appears that the decline came about as a result of losses experienced in sharedealing. However, the Exchequer was the one to suffer rather than the shareholders. For while the offtake in taxation was £139,571 less at £605,539, shareholders received 3s. 6d. per £1 share, equivalent to 17½ per cent, for the fourth year in succession.

A point in the balance sheet in need of some elaboration is the item relating to loans to mining companies, which shows a sharp increase to £1,908,750 as compared with £309,500 in the preceding year. This steep increase in all probability arises from the agreement reached with the Anglo-American Corporation of South Africa in April last for advances to be made to Freddies North Lease Area, and Freddies South Lease Area for £2,000,000 each.

Although the general trend of the gold share market continues downwards, thereby foreshadowing the possibility of a lower total dividend income on its investments in Rand gold mines, "Johnnies" investments extend far beyond the Rand gold mining industry, and encompassing as they do diamonds, copper, platinum, coal, etc., any lowering of dividend distributions from its Rand holdings would have to be appreciable before the company's overall dividend income would be seriously affected.

The annual meeting will be held in Johannesburg on November 25. Mr. H. J. Joel is chairman.

Gold Syndicate for Thailand

A financial syndicate of nine leading Siamese banks and a leading Siamese import-export firm, established last month will, according to a Reuter report, support the formation of a gold syndicate in Thailand to handle direct gold imports into the country.

This follows rumours that the Thailand Government was considering allowing a local bank to form a syndicate to handle gold imports.

One director of the projected financial syndicate said that the group had already applied to the Government for permission to import gold. He added that the Government at present was studying the possibility of International Monetary Fund objections to direct gold imports into Thailand.

It is understood that, if the plan for the formation of a syndicate is approved, imports will total around 60,000 oz. monthly and will come exclusively from the Netherlands.

Outlook for the Kolar Goldfields

An interesting commentary on the Kolar Gold Field group was made recently by Mr. M. A. Srinivasan, chairman of the Kolar Gold Mining Co., who said that the gold production of the group had increased substantially and that the industry was in a better position now than when the mines were operated by the Sterling companies. However, the position, he stated, was still far from satisfactory, as increased production costs together with the steep fall in gold prices had made the future prospects of the mines "far from bright."

With so much talk of nationalization in the air in the Far East, it was perhaps to be expected that sooner or later the question of nationalizing the gold mining companies on the Kolar field would be raised. In fact, our Indian correspondent in a recent despatch said that in anticipation of growing public feeling in favour of nationalizing the industry, Mr. K. Hanumanthaiya, Chief Minister of Mysore, stated in the Mysore Legislative Assembly that the question of nationalizing the Kolar Gold Field group of mining companies had not, so far, been seriously considered by the Mysore Government. And although they were aware of the trend of public sentiment on this matter, he said that "Public opinion cannot run an industry."

Amalgamated Tin Earns Less But Maintains Distribution

A third interim dividend of 14 per cent has been declared by Amalgamated Tin Mines of Nigeria in a preliminary statement covering the company's financial results for the year ended March 31, 1952. This dividend, which will be paid on October 24, together with the first payment of 8 per cent made in January, 1952 and the second payment of 8 per cent made in April, 1952 makes 30 per cent, less tax, for the year and is the same distribution as for the preceding year.

Profit before tax for the year ended March 31, amounted to £1,254,889 compared with £1,684,116, a decline of £429,227. But, to this figure has been added the sum of £65,000 (nil) which has been transferred from the royalty equalization reserve of £113,000 created last year, making a total of £1,319,889.

Taxation was appreciably lower at £770,000 against £1,056,000 and the sum of £23,187 (nil) has been written off a trade investment and loan, and £200,000 (£150,000) has been transferred to special depreciation. The 30 per cent dividend distribution required £307,125 (£314,925) and the balance, together with the balance of £202,806 (£177,615) brought forward from last year, leaves £222,383 (£202,806) to be carried forward.

The company's issued capital is £1,950,000 in 5s. units. Mr. J. Ivan Spens is chairman.

Company Shorts

President Brand Drilling Yields 1,207 in.-dwt. in W.9 Borehole.—President Brand Gold Mining has announced that borehole W.9 has intersected the basal reef at a depth of 4,597 ft. averaging 156.19 dwt. over a true width of 7.73 in. equivalent to 1,207 in.-dwt.

This borehole is located 3,500 ft. south of the company's No. 1 shaft on farm Welkom 80. The hole was sunk in order to secure information for the purpose of planning underground development.

Randfontein to Increase Borrowing Powers.—The amount which Randfontein Estates Gold Mining Co. (Witwatersrand) will require to enable it to undertake the production of uranium and sulphuric acid will exceed the amount which the directors may borrow in terms of the articles and shareholders will be asked at an Extraordinary General Meeting to be held on October 14 to increase the borrowing powers of the directors to the amount of the company's issued capital, namely £4,063,533.

Rand and O.F.S. Costs Rise in August.—The Transvaal Chamber of Mines has announced that the August working costs in the Rand were 4d. per ton higher at 33s. 11d. while the working profit declined from the July figure of £3,378,849 to £3,238,423. The tonnage milled declined from 5,073,500 tons to 4,987,000 tons.

In the Orange Free State, working costs increased 1s. to 46s., tonnage milled was 1,500 tons higher at 106,500 tons, while the estimated working profit was £14,075 compared with £22,683 in the preceding month.

"Geoffries" Drilling Intersects Reef on Spes Bona 3.—General Exploration Orange Free State has announced that in drilling borehole Spes Bona 3, on the farm Spes Bona No. 921 in the Odendaalsrus district of the Orange Free State, from a depth of 4,918 ft. 11 in. to 4,925 ft., a conglomerate reef was intersected assaying 4.0 dwt. over a core width of 73 in., equivalent to 292 in.-dwt. The core recovery was complete.

From 4,948 ft. 1 in. to 4,950 ft. 6 in., another conglomerate reef was intersected assaying 5.8 dwt. over a core width of 29 in. equivalent to 163 in.-dwt. Core recovery was complete. The base of the lava was intersected at 4,530 ft. There was excessive core loss between 4,800 ft. and 4,875 ft. and this portion of the hole will be deflected after completion of the original hole.

The borehole is situated approximately midway between boreholes TV.3 and Spes Bona 1.

Filani (Nigeria) Tin Makes Steady Progress.—The financial results of the Filani (Nigeria) Tin Mining Co. for the calendar year 1951, published in a preliminary statement, gives little scope for comment. Working profit at £13,883 was slightly down on the preceding year's earnings of £14,335. However, the tax attracted was less, £7,918 against £8,768 so that net earnings came out at a slightly higher figure than in the previous year—£5,965 against £5,567. The distribution was maintained at 10 per cent, free of tax, which required £2,649 and after writing £1,000 (£1,030) off mining leases, and £1,000 (nil) off investments, and allocating £1,000 (£2,000) to general reserve, the carry forward at the end of 1951 totalled £5,045 compared with £4,729 brought in.

Outstanding Debentures of Anglo-Burma Tin Reduced to £2,600.—Anglo-Burma Tin Co. has announced that its offer in July last, for the purchase of its outstanding 6 per cent debentures has been accepted by holders representing £58,950 debentures, thereby reducing the remaining debentures now outstanding to a mere £2,600.

The announcement also states that while there is no change in conditions existing in the Tavoy mining district, the output obtained from tribute operations during the quarter ended August 31, 1952, showed some improvement at 32 tons of tin ore, and compares with the output for the previous quarter ended May 31, of 15 tons tin ore.

Pena Copper Pays 10 per cent.—The net profit of the Pena Copper Mines for the calendar year 1951, after providing for all expenses, amounted to £20,755 compared with £6,585 in 1950. To this net figure was added £7,500 previously provided for re-opening the mine and now no longer required, and £4,326 brought in, making £32,581 (£21,924) available. The sum of £10,000 was allocated to general reserve, the dividend payment of 10 per cent (nil) on the £179,200 issued capital divided into shares of 6s. 8d. each, absorbed a net amount of £9,408, leaving £13,173 (£4,326) to be ca ied forward.

No mineral was extracted during the year, although since the close of the year the extraction of pyrites commenced on a small scale and is now proceeding satisfactorily. Deliveries of ore during the year totalled 38,847 tons and the total value of mineral ore in stocks, taken at cost, was £9,942.

The annual meeting was held in London on September 24, Mr. John M. Adam is chairman.

Mr. Douglas T. Waring is to become chairman of Anglo-Oriental (Malaya) on October 1, on which date he will also become a director of London Tin Corporation.

At the annual general meeting of London Tin Corporation held on September 19 last, the chairman, **Mr. J. Ivan Spens,** announced that **Mr. Warren** was relinquishing the chairmanship of Anglo-Oriental (Malaya) as from October 1, for health reasons.

Mr. Harold Edgar Barrenger has been appointed director of Sungei Besi Mines and of Kepong Dredging Co.

Mr. Jack Farrance Chadwick has been appointed a director of Beralt Tin and Wolfram in succession to **Lt.-Col. F. H. Windrum,** deceased.

DIVIDENDS

Amalgamated Tin Mines of Nigeria 14% *i* (Oct. 24)
Ashanti Goldfields 25% *i*
Bangrin Tin Dredging 10% (Oct. 30)
Bibiani 7½% *i*
British Aluminium 4% *i* (Nov. 1)
Malayan Tin Dredging 1s. 6d. *i* (Oct. 31)
Naraguta Tin 7½% (Nov. 28)
Siamese Tin Syndicate 25% (Oct. 24)
Southern Malayan Tin Dredging 1s. 6d. *i* (Oct. 29)
Tekka 2½% *i* (Oct. 8)
Yukon Consolidated 8c. (Oct. 31)

i interim

POWELL DUFFRYN LTD.

The Annual Accounts to March 31, 1952 were presented at the Annual General Meeting, held on September 24. The following is an extract of the Statement of the Chairman, **Sir Herbert Merrett:**

Dividends are maintained at the same rate as for the past eight years and the carry-forward further increased.

After six years concentrated work, some progress can be reported towards a settlement of the compensation to be received for the nationalized assets. In South Wales, 97 per cent of the owners have reached voluntary agreement on the division of the District's share of the global sum, and the value of all short workings has been agreed. It is to be hoped that, within reasonable time, the District Valuation Board will deal with the outstanding 3 per cent and will also confirm the figures submitted under the voluntary arrangement. The company and the Coal Board have agreed to appoint an independent person to value the main ancillary assets. Final settlement of compensation will not result in any return of capital.

Most satisfactory progress has been made at the Vacuum Oil Co.'s refinery at Coryton, and great credit must be given to the supervising Socony-Vacuum technicians. Crude oil is now being received at Coryton and refined products will be available in a few months. By midsummer 1953 the refinery should be in full production.

Stephenson Clarke Ltd. continues to make a substantial contribution to our trading profits. Its colliers are all fully employed and the fleet is being further increased. As leading distributors of coal in this country, Stephenson Clarke and its subsidiaries, and in particular Associated Coal and Wharf Companies Ltd., with its depots and handling facilities at many ports in the south of England, give efficient service to all classes of coal consumers.

Cory Brothers & Co. Ltd. has shown improved results. The company has extended its Tank Farm at Barry where the total capacity is now 120,000 tons. In addition to the storage of edible oils for the Ministry of Food, we have adequate space for all kinds of fuel oils, with which we are bunkering ships and supplying the needs of inland consumers. A site has been leased for another Tank Farm at Ipswich which it is expected will be working during the coming year. Cory Brothers recently acquired the whole of the share capital of Chellew Steamship Management Co. Ltd. which manages the ships of Chellew Navigation Co. Ltd.

The Wankie Colliery Co. Ltd., of which we are the Managers, has transferred its domicile from London to Salisbury, Southern Rhodesia. Consequent upon this change, we formed our own company in Southern Rhodesia and are now operating there through a subsidiary known as Powell Duffryn (Rhodesia) Ltd. Mr. Robert Foot, who has been associated with Wankie and its management since we first became interested in the company, agreed to follow the company to Southern Rhodesia with his technical experts and advisers, and as far as the Powell Duffryn Group is concerned, is now devoting his undivided attention to Wankie and other Powell Duffryn interests in Central and South Africa.

Cambrian Wagon and Engineering Co. Ltd. (the new name of the company which previously traded as Cambrian Wagon Works Ltd.) has extended its activities to include the construction of mine cars, oil tanks and has other operations in mind. The company is also doing important work connected with the rearmament programme. Negotiations are on hand for a large new contract for mineral wagons.

Powell Duffryn Carbon Products Ltd. is now concentrating largely upon the manufacture of special appliances where acid-resisting material is essential. Technical progress has been made and we are content to wait for satisfactory commercial results. Chemical engineering plant of first-class quality as well as electrical and mechanical carbons are being produced and these are finding new markets in various parts of the world. Progress is being made in the construction of a works in Chicago by Delanium Carbon Corporation, in which we are partners with the Great Lakes Carbon Corporation of America. This company should come into production during the current trading year.

As regards other activities overseas, in South America, the Middle East, and North Africa, trade and profits are better, although the turnover in coal is much less.

Further progress has been made by Powell Duffryn Scandinavian Timber Co. Ltd. This company is now well established and is trading profitably in Sweden and Finland.

In Spain, record profits have been made by our company. Our partners, Duro-Felguera, have given us much assistance in providing coal for our customers when suitable British coals were not available.

In to-day's trading conditions, continued and concentrated effort and initiative are still needed and I am confident that the management of your company is well balanced and will continue to overcome, so far as is humanly possible, all obstacles which we will have to face.

The report and accounts were adopted.

LONDON TIN CORPORATION

CHAIRMAN'S SPEECH

The Twenty-Sixth Annual General Meeting of London Tin Corporation Ltd., was held on September 19 at The Chartered Insurance Institute, Aldermanbury, London, E.C.

Mr. J. Ivan Spens, chairman of the Corporation, who presided said:

ACCOUNTS

The feature of the accounts this year is the marked increase in the taxation payable on the year's profits which more than offsets the satisfactory increase in the gross income.

GENERAL RESERVE

The successful rehabilitation of the mines in Malaya and Siam has rendered no longer necessary certain provisions against investments and loan, which were made in previous years, and the sum of £183,500 has accordingly been transferred to General Reserve. This sum together with an appropriation from profit and loss account of £41,500 brings the General Reserve from £500,000 to £725,000.

DIVIDEND

In order to pass on to shareholders some benefit from the Corporation's increased income, the directors have recommended a bonus of 2 per cent, payable with the final dividend of 13 per cent, making 20 per cent for the year, against 18 per cent last year. It must not be assumed, however, that the current year's accounts will permit a similar distribution.

TAXATION

The heavy increase in taxation on the profits for the year under review is partly due to the fact (explained in my speech last year) that the Corporation's taxation "losses forward" were to all intents and purposes exhausted, and partly to the appropriate provision for Excess Profits Levy for the four months to April 30, 1952.

For taxation purposes the Corporation is treated as a finance company. Our investments in the years 1947, 1948 and 1949 were almost entirely in the tin-mining industry overseas—of which more than two-thirds was in the Far East in countries which had been in enemy occupation. Moreover, firstly, dividends received from investments are received a considerable time after they are earned and the basic years for Excess Profits Levy are unrealistic as regards this Corporation and, secondly, over 60 per cent of our income from investments in the tin-mining industry is received from companies registered abroad.

On this basis representations were made by this Corporation to the Chancellor of the Exchequer for some measure of relief from the Excess Profits Levy but, unfortunately, without success. Consequently the relief extended to mining companies registered in this country and operating abroad (including the choice of an additional basic year for companies operating in enemy-occupied territory) does not appear to apply to us. In addition, when this Corporation holds less than 25 per cent of the share capital of a Malayan tin-mining or any other company ordinarily resident in the United Kingdom, even despite the fact that such companies are liable to Excess Profits Levy, the dividends received called "franked investment income" are not excluded for the purpose of computing this Corporation's liability to Excess Profits Levy. While "franked investment income" is excluded for Profits Tax, I do not understand why *all* "franked income" (as in the case for Profits Tax) has not been excluded for Excess Profits Levy since clearly double and unfair taxation is involved.

INVESTMENTS

In my speech last year I advised members that it was the Board's intention to use some of the Corporation's funds for investment other than in gilt-edged or in tin-mining projects in order to broaden the basis of the Corporation's portfolio. This has been implemented to some extent during the year but clearly it is necessary to consider carefully, with the charge for Excess Profits Levy computed as it is at present, what alternative policy might be more in the interests of our shareholders.

PRICE OF TIN

The average price of metallic tin during the year under review was approximately £968 per ton. The price of tin, however, must be considered in relation to the economic situation of the producer and it has to be remembered that the provision necessary for maintenance and replacements, and for propecting and development of fresh ore reserves has greatly increased. As compared with the period prior to 1939 the yield has tended to decrease disproportionately to the risk involved. Moreover, it must be stressed that the shallower, richer and more easily worked deposits of tin ore, to which we had become accustomed in the past in the Far East and in Nigeria, are becoming exhausted. The problem under present conditions is how economically to continue to mine the mineral deposits now found at greater depth which are, of course, more costly to equip and recover.

These are demonstrable and undeniable facts and it is extremely unfortunate that during the past year there should have emanated from seemingly responsible authorities in the U.S.A.—the biggest tin-consuming country in the world—statements in criticism of the tin mining industry and of the price of tin which were untrue and unfair.

In November, 1951, a mission appointed by the U.S.A. toured Malaya—the biggest tin-producing country in the world—and studied all the phases of mining, smelting and marketing of tin in that country. It was understood that the above-mentioned criticisms were not supported by this mission, although its report, which we had every reason to expect to be published, has not yet appeared.

However, Mr. Jess Larson, Administrator of the U.S.A. General Services, in recent statements said, *inter alia:* (1) "The situation in the producing areas, particularly Malaya, is one of continuing effort to maintain production under difficult circumstances. An official United States Government Mission visited Malaya last year and complimented the producers and miners on their patriotic efforts to keep production going in the face of Communist terrorism," and (2) "a price that users of tin can afford to pay which, at the same time, will give producers a fair return is surely the goal of us all."

It is fervently hoped that all misunderstandings may be amicably and equitably resolved to the advantage of both the producers and the consumers of tin.

The Reconstruction Finance Corporation has ceased from August 1, 1952, to act as the sole importer of tin into the U.S.A., which function it assumed on March 12, 1951. The effect of this action on the world price of metallic tin must take some little time to become clear, but I fail to understand why all the restrictions in the U.S.A. upon the end-uses of tin have not been removed.

MALAYA

The action taken by the High Commissioner and the Government of Malaya during the past year has brought about a feeling of more confidence but the emergency continues, and we are mindful that the staff, both European and Asian, continue to discharge their duties under exceedingly trying conditions and deserve our gratitude and appreciation.

Only three of the pre-war fleet of dredges under the management of Anglo-Oriental (Malaya) Ltd., remain to be rehabilitated; one of these is under active reconstruction; work on one is delayed pending the result of negotiations for a new area and one is delayed by security conditions. In addition one dredge has had to be closed down for the same reason.

In the near future, however, certain of the dredges in operation will have exhausted their present areas and will have to be dismantled and transferred to new areas which had been proved and acquired in earlier years. Such dredges may be expected to be out of operation for about 12 to 18 months. Some of the older shallow-digging dredges will also soon present a problem when their present areas are exhausted, as any new areas found are likely to be deeper than those for which they were designed.

The resumption of prospecting on a large scale becomes increasingly urgent, but under present conditions prospecting is almost at a standstill.

A large number of war damage compensation claims have been agreed during the year and 75 per cent of the awards have been paid.

BURMA

There has been no material change in the situation in Burma from that reported last year, and no production has been possible during the year under review.

SIAM

The dredges under the management of Anglo-Oriental (Malaya) Ltd., continued to work without interruption, but some of them are approaching the end of their present ore reserves. One has now ceased operation and is being dismantled for removal to another property, and plans are in hand for the removal of another which is expected to finish its ore reserves during the current year. The rehabilitation and reconstruction of a third dredge was started during the year, but it is not likely to be in operation for another year because of the delay in delivery of materials.

NIGERIA

Production of tin in Nigeria was slightly higher than in the previous year. On the mines under the management of A. O. Nigeria Ltd. the emphasis has been on trying to increase the annual turnover of yardage and to improve recovery. To this end a considerable quantity of new earth-moving equipment has been installed and a new ore treatment plant came into operation. The output of columbite has continued satisfactorily and every effort is being made further to increase it.

GENERAL PROSPECTING

In Nigeria on behalf of this Corporation a preliminary investigation of possible lead-zinc deposits was made in the last dry season and work will be resumed shortly. The indications at present are that no large-scale production from one substantial ore body is

anticipated but a number of ore shoots may be proved from which a satisfactory production might be obtained.

A decision as to whether the prospect might prove worth developing must await the result of the work now to be undertaken.

During the year our chief geologist and mining engineers have visited South Africa and British Honduras on behalf of this Corporation.

In regard to South Africa, it was decided not to proceed in taking an interest in a company already operating there.

The results of the examination for the possibility of tin ore deposits in British Honduras did not warrant any further action.

On behalf of this Corporation engineers from the staff of Anglo-Oriental (Malaya) Ltd.: (1) prospected in Borneo without success; (2) did some preliminary work in the Solomon Islands, and their reports are now being studied.

DIRECTORATE

Mr. Warren retired from the Board of this Corporation on April 30 this year. He is relinquishing the chairmanship of Anglo-Oriental (Malaya) Ltd., as from October 1, 1952, because for reasons of health he should not reside, as formerly, in the East.

Shareholders, I am sure, will be glad to know his services will still be available to the Corporation and that he will visit Malaya, Nigeria or any other future sphere of our operations from time to time, as appears desirable.

I cannot express sufficiently strongly my own and my co-directors' appreciation of all Mr. Warren has done throughout his service with your Corporation's organization.

We all deeply regret that Mr. H. A. Coates, until recently chairman of A.O. (Australia) Pty. Ltd., to whom I referred last year, died in July this year.

On his appointment as Speaker of the House of Commons, Mr. W. S. Morrison resigned from the Board of the Corporation and we shall miss his wise counsel. Sir Kenneth Harper has accepted a seat on the Board and his appointment will be submitted for confirmation at the meeting.

STAFF

I have again to express my own and the Board's appreciation of the loyal service rendered by the management and staffs throughout the organization. Conditions nowhere are easy and call for constant diligence and resourcefulness.

The report and accounts for the year ended April 30, 1952, were adopted and the retiring directors re-elected.

The chairman informed the shareholders that Mr. Douglas T. Waring would become chairman of Anglo-Oriental (Malaya) Ltd., on October 1, 1952, and the Board of London Tin Corporation had at their meeting before this annual general meeting elected Mr. Waring a director of London Tin Corporation Ltd., as from the date of his appointment as chairman of Anglo-Oriental (Malaya) Ltd.

GEEVOR TIN MINES

EXCELLENT RESULTS

The Thirty-Ninth Annual General Meeting of Geevor Tin Mines Ltd., was held on September 23 in London.

Mr. G. W. Simms (the chairman) presided, and the following is an extract from his statement for the year ended March 31, 1952:—

The company has again achieved excellent results, despite a continued rise during the year in the cost of mine stores, power, freight rates, and wages. Although the output of 740 tons of black tin exceeded the previous year's output by 6 tons, proceeds of tin at £439,704 are less by £11,000. The working profit of £222,825 compares with a profit of £246,906 for 1950-51, and the directors recommend the payment of a final dividend of 1s. 9d. per stock unit, which, with the interim dividend of 9d. per unit already paid, will make a total dividend for the financial year of 2s. 6d. per stock unit, less income tax.

In times past we have had at intervals visits from responsible members of different Governments who appeared to recognize the necessity of investigating and developing the mineral wealth of this country. But the recent imposition of the grossly inequitable Excess Profits Levy as an addition to taxation, which was already penal where a wasting asset is concerned, has created a complete barrier to the development of the Cornish tin-mining industry by private enterprise, and by so doing has eliminated the best hope of its future development.

Experience during the last war has shown that a short-term policy for increasing production of tin from Cornwall involves very heavy expenditure and accomplishes nothing worth while as regards development of the industry. But having regard to the outlook in Bolivia as a result of the proposed nationalization of her tin industry, it would seem that the United Kingdom Government now has reason to feel uneasy about the long-term position of its tin supplies in times of peace, and that it should in common prudence take action to develop its own tin resources as much as possible, especially when that can be done at little cost to itself by adopting an enlightened mine taxation policy.

The report and accounts were adopted.

LAHAT MINES

The Forty-Fifth Annual General Meeting of Lahat Mines Ltd., was held on September 23 in London. **Mr. E. V. Pearce,** the chairman, presiding.

The following is an extract from his circulated statement:

The working profit for the year to March 31, 1952, was £10,687. After providing for United Kingdom taxation and expenditure on prospecting there remains a balance of £3,315, which, with the balance unappropriated at March 31, 1951, makes a total credit of £6,072. The sum of £100 has been transferred to general reserve. Dividends for the year totalling 1s. 3d. per share (net) have been paid, absorbing £3,937 and leaving a balance of £2,035 to be carried forward.

Tributors produced 131 tons of tin ore (as against 253 tons in the previous year) and the company received tribute amounting to £14,937. During the year, operations were almost entirely confined to development at depth of the Temple area.

The development of this area is being pushed on as rapidly as possible and it is encouraging to learn from the general managers' report that "satisfactory returns are anticipated from the Temple area during the current year and prospects are favourable." Operations have been much hampered by terrorist activities.

During the year under review, the price of tin on the Singapore market varied between $629.50 per picul, equivalent to £1,247 15s. per ton, and $400.00 per picul, equivalent to £792 15s. while for the whole year it averaged £955 10s. per ton.

What are the prospects regarding the future? As far as I see the position, there is ground for believing that for some time to come the price will remain at a reasonable level. The two main factors contributing to this view are (1) the almost complete cessation of prospecting in Malaya during the last twenty years, as a consequence of which practically no new areas have been developed to take the place of those which are being worked out, and (2) that sooner or later the severe restriction which has been imposed on the end-uses of tin in the U.S.A. will be lifted.

Unless an entirely new tin field is discovered, it appears that world production will decrease—there are already indications of this—while on the other hand I think it reasonable to expect that consumption will increase. If these premises are correct it seems that your company can look forward to a reasonable measure of prosperity.

I regret to report that we are still without news of any compensation to be awarded us for War Damage.

The report was adopted.

WOLVERHAMPTON DIAMOND DIE & TOOL Co. Ltd.

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AMALGAMATED ANTHRACITE COLLIERIES LTD.

DEVELOPMENT OF ACTIVITIES

The Twenty-Eighth Annual General Meeting of Amalgamated Anthracite Collieries Ltd. was held on September 24 in London, **Mr. John Waddell,** the chairman, presiding.

The following is an extract from his circulated statement:—

At last our general position arising from the Coal Industry Nationalization Act has become reasonably clear. The net amount which we had been awarded is somewhat below the average of the district, but, having regard to certain long-term contracts and the general anthracite background, there seems little doubt that we would have done no better by going through the valuation procedure and we might have done very considerably worse.

Our overall capital is £4,186,770; our sole future asset is the share capital of The British Anthracite Co., which is a large operating concern making good profits. The saleable value of this asset might be such that one could realize somewhere near £2,500,000 for the parent company. The British Anthracite Co. Ltd. has earned before taxation more than 10 per cent on the entire capital of the parent company. Subject to completing the payment of Funding Certificates and were it not for the penal effect of profits tax on equity shareholders, it is clear that the earnings available to Ordinary stockholders are really substantial, because the maximum the Preference stockholders are entitled to in any year is £179,000 gross; therefore, were it not for the tax there would be about £300,000 of earnings available for the Ordinary stockholders, who therefore are very substantially interested.

RE-DEPLOYMENT OF RESOURCES

I think members will realize that although we have had to face up to a terrible situation arising from the Coal Industry Act, which could not have come at a worse moment for South Wales and in particular for anthracite collieries, and although we have had to face up, even on our operating companies, to further effects of nationalization in respect of the loss of our wagons and our business as sales agents, we have, by careful re-deployment of our resources, done a great deal to offset the ill-effects of the Coal Nationalisation Act and to provide our stockholders with a real future which I hope will become a future reflected in dividends when two conditions can be complied with.

One of these conditions is a need for more liquid cash. The effect of inflation over the last few years has meant that our cash resources have not been adequate to meet our requirements for stocks, debtors and things of that kind and that we can do with £500,000 more of liquid cash. We propose as soon as the opportunity is ripe, to raise this by means of notes or something of that nature so as to put our liquid position right and thus enable us to start a policy of increased dividends on the Preference stock and some dividend on the Ordinary stock of the parent company. The effect of an issue of notes on our profits would not be great as we are already paying bank interest to a large extent, but it would make our liquid position sufficiently strong so that we would feel justified and pleased to pay further dividends to our stockholders.

As regards the other major activities of our Group and subsidiaries, I must say that the policy of concentrating and developing these has borne very good fruit. Our large distributive, operating and exporting concerns have extended their facilities and their customers and their trade generally. In practically every case they have made good profits and are doing so on a solid basis which promises well for the future. The Anglo-French Trust Ltd. and our industrial group of investments has also made an exceedingly substantial contribution to our profits. Here again our long-term policy of taking up interests and then building up, consolidating and reorganizing them is satisfactory.

Our activities generally in the building trade such as brick manufacturing, builders' merchanting and things of that nature are showing normal development. Our reorganization of the Lincoln brickworks, while not a great contributor to 1951, is undoubtedly bearing good fruit in 1952. Our new works at Cynghordy went into production in 1950 and is more or less running normally and profitably and it is likely to have a good future. The works were originally laid out on the basis that it could be doubled in capacity if justified and there seems every hope that we may consider doubling up the works in the near future as the demands for bricks and building materials generally are strong and look like being good for some years to come.

In the meantime I am pleased to say that for the first half of 1952 practically all of our activities are as good or slightly better than for the first half of the previous year. With regard to dividends, I feel these should be a possibility immediately we have finally settled up all the colliery matters and have put our liquid position right by obtaining some £500,000 of further funds.

The report was adopted.

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JOHANNESBURG CONSOLIDATED INVESTMENT CO., LTD.

(Incorporated in the Union of South Africa)

REPORT OF DIRECTORS to be submitted to the Shareholders at a Meeting to be held in the Board Room, Johannesburg Consolidated Investment Company, Limited, Consolidated Building, Fox Street, Johannesburg, on 25th November, 1952, at 11 o'clock in the forenoon.

Accounts for the year ended 30th June, 1952.—The Company's Balance Sheet as at 30th June, 1952, and Profit and Loss Account for the year ended on that date are submitted herewith. These are drawn up in accordance with the requirements of Company Law in the United Kingdom and the Union of South Africa as at 30th June, 1952. Legislation has been passed in South Africa to amend the existing Company Law, but the date from which the new Act will come into operation has still to be proclaimed.

Profit and Loss Account.—The profit for the year amounts to ...		£1,444,237
To which is added the balance brought forward from the previous year		372,560
Giving a total of ...		1,816,797
From which the following amounts have been deducted:		
Taxation on Profits for the year ...	£605,539	
Transfer to Investment Reserve ...	500,000	
Dividend of 3s. 6d. per share, less United Kingdom Income Tax, declared on 29th July, 1952, and payable on 19th September, 1952 ...	362,906	
		1,468,445
Leaving a balance to be carried forward of ...		£348,352

In compliance with Section 350 of the United Kingdom Income Tax Act, 1952, Income Tax at the standard rate will be deducted from the dividend, the relief in respect of Dominion Taxes being retained by the Company.

INVESTMENTS.—The Company's holdings of quoted investments are included in the Balance Sheet at cost, the Stock Exchange value at 30th June, 1952, or Directors' valuation at that date, whichever was lowest. Unquoted investments are included at cost or Directors' valuation at 30th June, 1952, whichever was the lower.

GOLD MINING INTERESTS.—During the year under review, Transvaal gold mining costs have risen from 32s. 3d. per ton in June, 1951, to 33s. 5d. per ton in June, 1952. The upward trend in costs has continued and remains a serious problem for the gold mining industry. As a result of the opening of the London Foreign Exchange Market in the latter part of 1951, with a limited permissible variation in dollar-sterling exchange, the price at which the South African Reserve Bank purchased Rand gold varied from the price of 248s. 3d. per ounce fine, which was fixed in September, 1949. Initially this variation was dealt with through a special pool account, which for the six months to 30th June, 1952, resulted in an additional amount of approximately 8d. per ounce fine being distributed to producers. The pool was closed at the end of June, and as from 1st July, 1952, variations in the gold price arising from the above cause have been taken into account in the monthly declarations of profit.

The shafts at Freddies North Lease Area, Ltd., and Freddies South Lease Area, Ltd., have been sunk to the required depths, and development is now proceeding. The construction of surface plant and buildings is progressing satisfactorily. Owing to rising costs, and the difficulties and delays which were experienced during shaft sinking, the provision of additional funds has become necessary. In April, 1952, arrangements were made to advance £2,000,000 to each of these two Companies by this Company and Anglo American Corporation of South Africa, Ltd., jointly.

DIAMONDS.—Diamond sales for the year to 31st December, 1951, amounted to the record sum of £65,000,000, the previous highest total being £51,000,000 in 1950. Sales for the six months to June, 1952, amounted to £38,300,000.

For the year ended 31st December, 1951, the Deferred shareholders of De Beers Consolidated Mines, Ltd., received dividends totalling 200 per cent.

COPPER.—The price of copper has risen from £234 per ton in June, 1951, to £285 per ton in August, 1952, the demand for copper being fully maintained.

Rhokana Corporation, Ltd. declared dividends totalling 200 per cent on the Ordinary Share Capital for the year to 30th June, 1951, and an interim dividend of 50 per cent for the year to 30th June, 1952. For the same periods, Rhodesian Anglo American Ltd., declared dividends of 55 per cent and 12½ per cent (interim) respectively. N'changa Consolidated Copper Mines, Ltd. declared a dividend of 50 per cent for the year ended 31st March, 1952.

PLATINUM.—The demand for Platinum continues to be steady and, following upon a temporary increase to $105 per ounce, the United States price is now $93 per ounce. The official price of £27 per ounce in the United Kingdom, however, has been maintained throughout the year to 30th June, 1952.

The work involved in increasing the output of Rustenburg Platinum Mines, Ltd., has proceeded satisfactorily while construction work has commenced at the new matte treatment plant which is being erected in South Africa.

COAL.—The tonnage sold by the coal mining companies of the Group for the year to 30th June, 1952, was 1,797,341 tons. Dividends paid for the year were: Consolidated Collieries, Ltd., 3½ per cent, Phoenix Colliery, Ltd., 17½ per cent, and New Springs Colliery, Ltd., five-sixths per cent.

THE SOUTH AFRICAN BREWERIES, LTD.—The trade of the Company has increased. A controlling interest was acquired in the business of Rhodesian Breweries, Ltd., in exchange for certain Rhodesian assets of The South African Breweries, Ltd.

LEAD AND ZINC.—During the year to 30th June, 1952, the Abbeytown Mining Co., Ltd. had successful trading results.

Construction of the milling plant at Llanrwst Lead Mines Ltd. has been completed and milling commenced in June, 1952.

During the year to 30th June, 1952, further exploration was carried out in the Matlock area of Derbyshire, and a separate company will be formed to continue the investigation.

TRANSFER OF RESIDENCE.—Application was made to H.M. Treasury in the latter part of 1951 under Section 36 of the Finance Act, 1951 (Section 468 of the Income Tax Act, 1952), for consent to transfer the central control and management of the Company to South Africa. Consent was refused in July, 1952, without any reason being assigned therefor.

DIRECTORS.—The Directors deeply regret to record the death of Mr. J. K. Cockburn Millar, who joined the Board in October, 1948.

In terms of the Company's Articles of Association, the following Directors retire by rotation, and, being eligible, offer themselves for re-election: Mr. K. D. Harris, Mr. Leif Egeland and Mr. T. F. C. Frost.

AUDITORS.—Owing to the provisions of the South African Public Accountants and Auditors Act, 1951, Messrs. Kemp, Chatteris & Co. were precluded from retaining the appointment of Auditors of the Company and therefore resigned that office on 31st December, 1951. Messrs. Saml. Thomson & Young and Messrs. Francis Dix, Bird & Co., who up to that date had carried out the audit of the Company's books in South Africa, were, in terms of Section 98 (6) of the South African Companies Act, appointed Joint Auditors of the Company from 1st January, 1952, to fill the casual vacancy thus created. Messrs. Kemp, Chatteris & Co. were appointed Consulting Accountants in the United Kingdom to report on the Accounts in relation to the United Kingdom Companies Act, 1948.

OFFICIALS AND STAFF.—The Board gratefully record their appreciation of the services of the officials and staff.

By Order of the Board, D. L. REYNOLDS, Secretary.

10 & 11, Austin Friars, London, E.C.2.
18th September, 1952.

PROFIT AND LOSS ACCOUNT FOR YEAR ENDED 30th JUNE, 1952

(Expressed in South African currency, par of exchange having been adopted for conversion of United Kingdom currency)

1951 £	£		£	£
1,745,120		DIVIDENDS, PROFIT ON REALISATION OF INVESTMENTS, FEES AND SUNDRY REVENUE after deducting Administration Expenses (excluding Directors' remuneration) ...		1,598,221
		NOTES:—(i) *Dividends before deduction of United Kingdom tax amounted to* £1,244,562 (1951: £1,250,457)		
		(ii) *Profit on realisation of Investments is calculated on the book values of such Investments at 30th June, 1951, adjusted by the cost of subsequent purchases.*		
		(iii) *The net amount, viz.* £923,135 *arising from the adjustment of the values of Investments on the basis stated in the Balance Sheet. (Note* (i) *under* INVESTMENTS) *has been deducted from Investment Reserve* (1951: £157,913 *added to Investment Reserve)*		
		Less: DIRECTORS' REMUNERATION—		
25,685		Directors' Fees ... £27,837		
		The remuneration to be stated under Section 90 *sext.* (1) (c) *of the South African Companies Act,* 1926 *(as amended) is* £14,352		
37,377		Other Emoluments ... 40,655		
8,000		Pensions for past executive services ... 8,000		
5,000		Compensation for loss of office paid by Associated Company ... —		
76,062		76,492		
19,483		*Less:* Amounts paid by Subsidiary and Associated Companies ... 16,560		
56,579			59,932	
56,589		INTEREST (gross) on Unsecured Loan Stock ...	90,000	
3,305		DEPRECIATION—Plant and Equipment ...	4,052	
116,473				153,984
1,628,647		BALANCE being Profit before Taxation ...		1,444,237
351,929		*Add:* BALANCE brought forward at 30th June, 1951 ...		372,560
1,980,576				1,816,797
		Deduct: TAXATION on profits for the year—		
530,534		United Kingdom Income Tax ... £538,546		
90,000		United Kingdom Profits Tax ... 40,000		
		(The above charges for Taxation are computed after allowance for appropriate Double Taxation Reliefs)		
124,576		South African Taxes ... 26,993		
745,110			605,539	
—		TRANSFER TO INVESTMENT RESERVE ...	500,000	
500,000		TRANSFER TO GENERAL RESERVE ...	—	
362,906		DIVIDEND No. 60 of 3s. 6d. PER SHARE, after deduction of United Kingdom Income Tax, payable 19th September, 1952	362,906	
1,608,016				1,468,445
£372,560		BALANCE carried forward at 30th June, 1952 ...		£348,352

BALANCE SHEET 30th JUNE, 1952

(Expressed in South African currency, par of exchange having been adopted for conversion of United Kingdom currency)

1951			1951		
£	£		£	£	£
		Share Capital—			
7,000,000		Authorized: 7,000,000 shares of £1 each	7,000,000		
	3,950,000	Issued: 3,950,000 shares, £1 each, fully pd.		3,950,000	
		Capital Reserve—			
200,000		Share Premiums	200,000		
	4,150,000			4,150,000	
		Revenue Reserves and Surplus—			
5,500,000		General Reserve	5,500,000		
		Investment Reserve—			
1,865,127		Balance at 30th June, 1951 £1,865,127			
		Add: Transfer from Profit and Loss Account ... 500,000			
			2,365,127		
		Deduct: Net amount arising from the adjustment of the values of Investments on the basis stated in Note (i) under INVESTMENTS... 923,135			
			1,441,992		
		United Kingdom Income Tax 1953-54: Based on profits for the year to 30th June, 1952, after allowance for appropriate Double Taxation Reliefs ...	500,000		
450,000					
372,560		Profit and Loss Account	348,352		
	8,187,687			7,790,344	
	12,337,687			11,940,344	
		Unsecured Loan—			
	2,000,000	4½% Sterling Unsecured Loan Stock Repayable 1958/62		2,000,000	
		Current Liabilities—			
85,680		Creditors and accrued charges	62,231		
617,689		Taxation (including U.K. Income Tax on profits to 30th June, 1951) ...	809,380		
159,355		Deposit and Current Accounts of Associated Companies	185,997		
38,306		Unclaimed Dividends	31,536		
362,906		Dividend for year ended 30th June, 1952, less U.K. Income Tax at 9s. 6d. in the £	362,906		
	1,263,936			1,452,050	
£15,601,623				£15,392,394	

NOTES.

1. Contingent Liabilities:—
Uncalled capital on Investments £258,341.
There are also contingent liabilities (*a*) under an agreement in respect of a Railway in the Orange Free State, (*b*) for option moneys under prospecting contracts and (*c*) for guarantees, &c.

2. Group Accounts have not been presented, as, in the opinion of the Directors, they would be of no real value to Shareholders in view of the insignificant amounts involved in the Accounts of Subsidiary Companies as compared with those of this Company.

3. Net aggregate amount of the Company's interest in the profits (less losses) of Subsidiary Companies:—

	In respect of financial years of Subsidiary Companies.			
	to 30th June,		prior to 1st July,	
	1952	1951	1951	1950
	£	£	£	£
(i) dealt with in this Company's Accounts for the year to 30th June, 1952. (1951) ...	6,399	15,824	35	—
(ii) not dealt with in this Company's Accounts. (*Including amounts appropriated for capital expenditure by Mining Companies*)	32,370 (net loss)	19,910 (*net loss*)	156,327	175,309

The amount to be stated in terms of Section 90 quin (2) of the South African Companies Act, 1926 (as amended) for the year to 30th June, 1952, is £26,006 (net loss). 1951, £72,478 (*net loss*).

H. J. JOEL, *Chairman*
A. W. CHRISTIE
} *Directors.*
D. L. REYNOLDS, *Secretary.*

1951			1951		
£	£		£	£	£
		Investments—			
9,811,237		Quoted in London	8,548,640		
461,317		Quoted in Johannesburg ...	422,293		
1,110,251		Unquoted	1,042,579		
11,382,805			10,013,512		
487,213		Subsidiary Companies	487,340		
	11,870,018			10,500,852	
		(i) Quoted Investments are included at cost, Stock Exchange value at 30th June, 1952, or the Directors' valuation at that date, whichever was the lowest. Unquoted Investments are included at cost or Directors' valuation at 30th June, 1952, whichever was the lower. (ii) Under authority of the United Kingdom Board of Trade, granted by virtue of Section 149 (4) of the Companies' Act, 1948, the market value of Investments is not stated. Whilst the market value of certain holdings cannot be ascertained with accuracy, the Directors are of the opinion that the aggregate market value of Investments at 30th June, 1952, was substantially in excess of the book value stated above.			
309,500		**Loans to Mining Companies** (including advances to Subsidiaries £175,000)		1,908,750	
42,377		**Mining and Other Properties and Options**—At cost less amounts written off...		96,781	
		Current Assets—			
17,227		Sundry stores and stocks on hand, at or under cost	23,985		
364,924		Loans (including advances to Subsidiary Company, £35,000)	92,607		
487,442		Dividends receivable and Debtors including amounts owing by (Subsidiary Companies, £8,658)	249,070		
300,000		Tax Reserve Certificates	—		
2,016,271		Cash at Bankers, at call and in hand	2,306,290		
	3,185,864			2,671,952	
	15,407,759			15,178,335	

Fixed Assets—

	Freehold Land and Buildings.		Plant and Equipment.		
	£	£	£	£	£
Cost ...	£370,628	361,281	£73,752	58,886	
Depreciation provided...	205,857	205,857	20,446	20,446	
	£164,771	155,424	£49,288	38,440	193,864
£15,601,623					£15,392,394

REPORT OF THE AUDITORS TO THE SHAREHOLDERS OF JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED.

We have examined the books, accounts and vouchers of the Company in South Africa and from that examination, and having regard to the report, which is adequate for the purpose of our audit, submitted to us by Messrs. Kemp, Chatteris & Co., Chartered Accountants, London, who have undertaken on our behalf the audit of the books and accounts kept by the Company in the United Kingdom, we are of the opinion that proper books and accounts have been kept by the Company. We have satisfied ourselves of the existence of the Securities and we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit. In our opinion, the annexed Balance Sheet gives a true and fair view of the state of the Company's affairs at 30th June, 1952, and the annexed Profit and Loss Account gives a true and fair view of the profit for the year ended on that date.

SAML. THOMSON & YOUNG,
FRANCIS DIX, BIRD & CO.,
Chartered Accountants (S.A.), Joint Auditors.

Johannesburg, 26th August, 1952.

REPORT OF MESSRS. KEMP, CHATTERIS & CO., LONDON, IN RELATION TO THE UNITED KINGDOM COMPANIE ACTS, 1948

We have examined the annexed Balance Sheet and Profit and Loss Account which are in agreement with the United Kingdom books of account, and audited accounts received from South Africa. In our opinion and to the best of our information and according to the explanations given to us the said Balance Sheet and Profit and Loss Account give the information required by the United Kingdom Companies Act, 1948, in the manner so required and the Balance Sheet gives a true and fair view of the state of the Company's affairs as at 30th June, 1952, and the Profit and Loss Account gives a true and fair view of the profit for the year ended on that date.

London, 26th August, 1952.

KEMP, CHATTERIS & CO., Chartered Accountants.

STATEMENT OF RESULTS OF OPERATIONS OF THE GOLD MINING COMPANIES OF THE GROUP

	Year ended 31st Dec.	East Champ d'Or G.M. Co., Ltd.	Government G.M. Areas (M) Cons. Ltd.	New State Areas Ltd.	Randfontein Estates G.M. Co., W., Ltd.	Witwatersrand G.M. Co., Ltd.	Totals and Averages
Tons milled	1951	388,000	2,766,000	688,000	4,097,000	708,000	8,647,000
	1950	393,000	2,859,000	1,019,000	4,192,000	653,000	9,116,000
Yield per Ton (dwts.)	1951	3.011	2.731	2.350	2.419	2.314	2.531
	1950	2.878	2.797	2.239	2.339	2.443	2.502
Working Costs per Ton...	1951	30s. 10d.	29s. 11d.	32s. 7d.	27s. 11d.	28s. 5d.	29s. 1d.
	1950	29s. 1d.	28s. 9d.	28s. 7d.	25s. 6d.	29s. 1d.	27s. 3d.
Working Profit or Loss	1951	£163,607	£869,245	£81,631	£759,047	£65,329	£1,938,859
	1950	£143,815	£977,975	£105,269	£856,030	£57,870	£2,140,959
Taxation and Government Share of Profit	1951	£67,689	£196,306	£1,630	£184,136	£11,866	£461,627
	1950	£52,153	£230,720	£1,206	£168,449	£1,881	£454,409
Dividends...	1951	30%	42½%	6¼%	11¼%	7.9%	—
	1950	30%	47½%	6¼%	15%	Approx.13½%	—
6 months to 30th June, 1952 ...		12½%	20%	3¼%	9%	—	—
Ore Reserves at 31st December, 1951 ...		377,000	7,801,000	205,000	4,090,000	122,000	12,595,000
Assay Value (dwts.)		3.5	2.9	4.3	3.0	2.7	—
Stoping Width (inches)		46	59	45	50	57	—
Ore Reserves at 31st December, 1950 ...		486,000	8,090,000	360,000	5,550,000	186,000	14,672,000
Assay Value (dwts.)		3.5	3.0	3.7	2.7	2.7	—
Stoping Width (inches)		46	62	43	51	57	—

CLIMAX ROCK DRILL AND ENGINEERING WORKS

The Thirty-ninth Annual General Meeting of the Climax Rock Drill and Engineering Works Ltd. was held at Winchester House, Old Broad Street, E.C.2, on September 23.

The following is an extract from the Statement by the Chairman and Managing Director (**Mr. Ralph Ewing, A.M.I.Mech.E.**), which was circulated with the report and accounts:

In presenting the Accounts of the Company for the 15 months to March 31, 1952, I should like to refer to the Company's letter to the Members dated May 12, 1952. That letter announced that Holman Brothers Ltd. had acquired an interest in the Company and that the Company was now a subsidiary of Messrs. Holman Brothers Ltd. In the circumstances, in order to comply with the Companies' Act, 1948, it was necessary for the financial year of the Company to be changed to March 31, 1952.

Some Members may not be aware that the Works of the Company and those of Messrs. Holman Brothers Ltd. are situated in close proximity to one another in Cornwall, where they have been operating on a competitive basis for about 90 years.

The acquisition by Messrs. Holman Brothers Ltd, which is a Private Limited Company, of a majority of the Company's Share Capital has brought the two Companies together, the present arrangement being that each Company retains its identity, co-operating in design, production and sales to the fullest possible extent, thereby cutting out wasteful competition.

The net profit before taxation for the 15 months is £57,160. The net profit for the year ended December 31, 1950, was £40,825, equivalent on a fifteen months' basis to £51,031, so that the profit for the period under review is, *pro rata*, £6,129 higher.

Turnover for the 15 months was 14.6 per cent greater than for the previous 15 months which may be regarded as satisfactory.

Stock and Work-in-Progress has increased during the period by £119,091. Stocks have been valued on a very conservative basis.

A final dividend of 5 per cent, less income tax, is recommended, which, with the interim dividend of 2½ per cent already paid, gives a total distribution on the increased Capital, including the Bonus Issue, for the 15 months of 7½ per cent, less income tax.

Dividends paid for the year ended December 31, 1950, were 5 per cent, less income tax, on the old Capital of £180,000 and 3½ per cent, less income tax, on the new Capital of £300,000 (of which £20,000 was subscribed in cash) costing £10,200 net.

Having regard to the fact that the 1950 dividend was for 12 months and the dividend now under review for 15 months the total distribution now proposed is slightly less than for 1950 but the Directors consider that it is prudent to make this small reduction in the rate of dividend in view of the need to conserve the Company's liquid resources.

During the fifteen months under review the Company has continued to expand its activities not only in the Home Market but also Overseas, the latter providing the major field for our products.

Our Sales show an appreciable increase and while orders in hand are satisfactory there are signs, particularly in certain overseas markets, not only of increased competition, but also of a tendency to curtail the programme of development work which may affect future sales. Much of this restriction is due to currency regulations sponsored by the Governments concerned and may be of a temporary nature, as for instance the regulation of imports to Australia and New Zealand and the lack of sterling in South America. The demand for our equipment, in spite of these temporary restrictions, will increase as the knowledge of the safety and convenience of compressed air power reaches an ever expanding field.

In May, 1951, we were successful in forming an Indian subsidiary company which is now in a position to cater for the varying demands of this large market, and while competition is keen it is hoped that we shall gradually expand our sales and service there.

The restrictions imposed on the supply of special steels, which form such a large part of our pneumatic tool products, caused serious delays in the early part of 1952 but the position is now improved.

A certain amount of armament work is in progress through our Works, not only for our standard products but also for special work, but the total value is not sufficient to disturb our normal production for export.

Our Maxam Air Equipment continues to find an expanding market and it is satisfactory to note that wherever installed this type of equipment has given complete satisfaction and many tributes have been received on the high quality of our material and workmanship. The market for these products, not only at home but also overseas, in nearly every manufacturing industry, is too large to assess and at present our sales are limited by the raw material immediately available.

The development of air compressors, rock drills and other ancillary equipment has had the constant attention of our design and research engineers and improvements and developments have been made so as to keep our products up to date in every respect.

The report and accounts were adopted.

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NOTICE IS HEREBY GIVEN that the Board of Directors have to-day declared an Interim Dividend (No. 30) on the Issued Capital of the Company at the rate of 3.6d. per Unit of Stock, less Income Tax at 9s. 6d. in the £. This Dividend which is in respect of the year ending September 30, 1952, to be payable on and after November 11, 1952, to all Stockholders on the Registers on September 26, 1952.

The Transfer Books will be closed from September 27, 1952, to October 6, 1952, both dates inclusive, for the preparation of Dividend Lists.

By Order of the Board,
E. W. MORGAN, *Secretary*.

Registered Address:
10, Old Jewry, London, E.C.2.
September 23, 1952.

ASHANTI GOLDFIELDS CORPORATION LTD.

NOTICE IS HEREBY GIVEN that the Board of Directors have to-day declared an Interim Dividend (No. 112) on the Issued Capital of the Corporation at the rate of 1s. 0d. per Unit of Stock, less Income Tax at 9s. 6d. in the £. This Dividend which is in respect of the year ending September 30, 1952, to be payable on and after November 11, 1952, to all Stockholders on the Registers on September 26, 1952.

The Transfer Books will be closed from September 27, 1952, to October 6, 1952, both dates inclusive, for the preparation of Dividend Lists.

By Order of the Board.
E. W. MORGAN, *Secretary*.

Registered Address:
10, Old Jewry, London, E.C.2.
September 23, 1952.

Mining Matters

Mr. Leslie H. Davies has been appointed Secretary of the London Advisory Committee of the Gold Coast Chamber of Mines in succession to Mr. R. A. Alldred who has resigned. As from October 1, all communications should be addressed to Mr. Davies at 27, Clement's Lane, Lombard Street, London, E.C.4. Tel.: Avenue 7444. Telegraphic address will continue to be "Golchamine, Stock, London."

Mr. J. C. Gilbert, a Director of J. C. Gilbert Ltd., Columbia House, Aldwych, London, W.C.2, will be leaving early in November on an extended trip to the Far East. He is including Australia, New Zealand, Malaya, Indonesia, Hong Kong, Formosa and Japan in his itinerary. The particular purpose of Mr. Gilbert's trip is to establish contact with mining companies who are not at present represented by selling agents in Europe, and he hopes that any readers of *The Mining Journal* who are likely to be interested in meeting him will contact him direct during the coming weeks.

British Aluminium Opens Branch in Southampton.—The British Aluminium Co. has announced the opening of a Southampton branch office to handle sales of unwrought and fabricated aluminium and aluminium-alloy in the counties of Sussex and Hampshire.

Mr. W. H. Marston has been appointed area representative and the address of the new branch is 20 Brunswick Place, Southampton.

Nu-Swift's Fire Extinguisher Approved in U.S.A.—Nu-Swift have announced that negotiations over the last five years have resulted in the acceptance and approval in the United States of the company's pressure-operated fire extinguisher. This is the first foreign-made fire extinguisher ever to be approved for use in the U.S.A. and its approval on behalf of the Associated Factory Mutual Fire Insurance Companies opens up a considerable dollar export field for the company's pressure-operated extinguishers.

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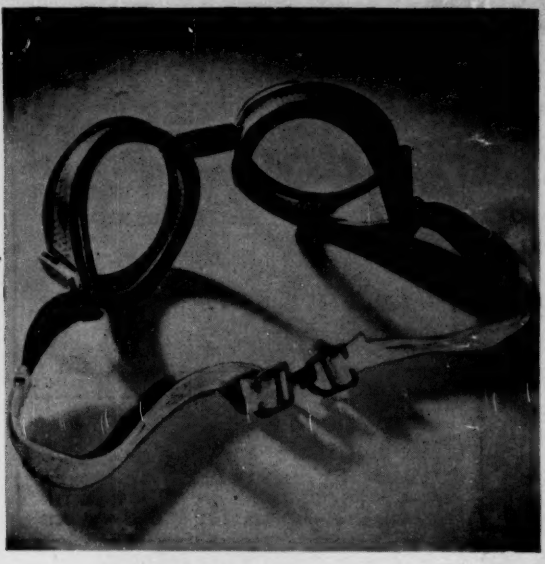

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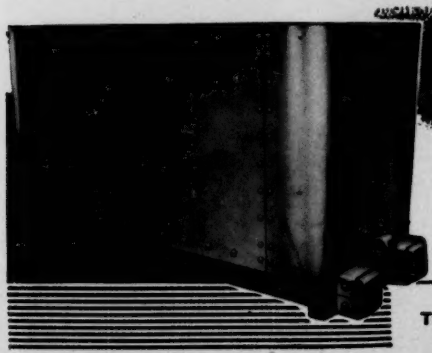

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